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BRITISH MEDICAL JOURNAL

LONDON SATURDAY AUGUST 8 1942

THE SPHINCTER MECHANISM OF THE LOWER END OF THE BILE DUCT*

BY

GORDON GORDON-TAYLOR, C.P., O.B.E., LL.D., F.R.C.S.

Temporary Surgeon Rear-Admiral

That some sphincteric arrangement exists in this region is of course incontrovertible. The obliquity of the bile duct in its passage through the wall of the duodenum, which attracted the attention of Fallopius in the sixteenth century, would seem to indicate an important part played by the muscular coats of the gut in the control of biliary outflow; this obliquity of channel and the marked prolongation of the "portio intestinalis" of the choledochus in certain animals—e.g., sheep, certain whales, seal, walrus, dolphin, leathery turtle, etc.—are very significant. Samson Wright (1940), however, adumbrates a dual mechanism and suggests the existence of additional fibres round the termination of the duct just before it finally reaches the lumen of the duodenum. It is concerning the existence of this special sphincter, its nature, and origin that there appears to be uncertainty.

The precise relation of function to structure may necessitate investigation by several methods of approach; there is no contentious rivalry between the methods of science, and one may prove of value in supplementing the lessons learned from another mode of inquiry, and may help to illumine the dark and more obscure parts of the problem. Various methods of investigation have been utilized by many different workers on the present problem: (1) the lessons from the results of operative surgery in man; (2) the experimental method, including the pharmacological approach; (3) the study of anatomy, including histological and embryological methods; and (4) the comparative-anatomy approach.

Surgical Evidence in Favour of a Special Intrinsic Sphincter

The hepatic infections which appear prone to constitute a frequent aftermath of promising operations for reconstruction of the injured or strictured main biliary channel, when the choledochus or more often the hepatic duct is united by surgical effort to the stomach or duodenum, and the recurrent attacks of cholangitis which are apt to punctuate the after-story of those for whom choledocho-duodenostomy has been performed for other pathological conditions of the main duct, are suggestive of a special sphincter mechanism at the lower end of the bile canal. The presence of such an intrinsic mechanism appears the more probable, since the bilio-digestive anastomoses referred to involve a portion of the alimentary tube apart from the biliary caruncle, and in those cases in which an end-to-end repair of the structured duct is possible and the integrity of the ostium is maintained, ascending cholangitis is less likely to appear. There seems to be something peculiar in the neuromuscular mechanism in this area which is absent in the muscular tissues of the neighbouring stomach or duodenum.

The presence of air in the upper portion of the biliary tree may denote a patent anastomosis, but also indicates the absence of a sphincter controlling reflux into the duct. The readiness with which the contents of a barium meal may penetrate up to the hepatic ramifications of the biliary tree after hepatico-duodenostomy was demonstrated radiologically by Lardennois; no mechanism comparable to that which obtains at the "biliary ostium" is reproduced by any surgical attachment of hepatic duct or choledochus to duodenum.

Mallet-Guy, Auger, and Croizat demonstrated experimentally the constancy and severity of ascending biliary infection which follows any surgical intervention that sections or destroys the sphincter mechanism; Bengolea and Velasco-Suarez (1939) also specially emphasized the frequency of cholangitis as a sequel to choledocho-duodenostomy, and entered a strong plea against its routine performance.

The remarkable immunity (Walton, 1939b) to ascending infection shown by cases of congenital dilatation of the bile duct for which an anastomosis has been performed between such a bile pond and the duodenum may be due to the escape of a certain quantity of the bile through the normal ostium and the preservation of the normality of the sphincter mechanism.

The Experimental Method of Inquiry

Perhaps the greater bulk of the literature relating to the problem has emanated from the experimental laboratory. The intermittent flow of bile from the intact papilla in man and gall-bladder-bearing animals, which contrasts with the continuous dribble in mammals which lack a gall-bladder, is thought to suggest the action of a special sphincter mechanism in the former group. The differing reaction to mechanical irritation of the biliary caruncle in the two mammalian groups which either boast or lack a gall-bladder has been reckoned as betokening divergent sphincter mechanisms; and the dilatation of the extrahepatic ducts after experimental or surgical cholecystectomy has also been regarded by some observers as indicative of some special functioning sphincter in the gall-bladder group and its absence in the other.

Mann and Higgins (1927) pointed out that if the intramural bile duct in animals was dissected away from the duodenal wall, care being taken to remove all the intestinal muscle grossly visible, there remained enough muscle around the lower end of the duct to prevent the escape of bile, even at a pressure greater than the secretory pressure of the liver or that induced by contraction of the gall-bladder: the area of the duct in this experiment which responded to stimulation was limited and restricted. Lueth (1931) expressed his certainty that the intramural portion of the common bile duct possesses a special sphincter mechanism, and even estimated that this sphincter exerts one-third to one-sixth of the total resistance offered to the flow of fluid through the "portio intestinalis."

Considerations of space preclude any complete catalogue and review of the experimental work devoted to the problem, and it would be churlish and impertinent for a surgeon dealing mainly with human anatomy to pass judgment on the labours of those whose approach to the problem bristles with formidable technical difficulties, yet it is not easy to find the truth amidst the fog of conflicting experimental results. Despite the use of methods of inquiry cleverly devised, elaborately staged, and graphically recorded, the experimental investigation of this limited anatomical district is necessarily a somewhat rude insult to the integrity of the extrahepatic ducts, and engenders a certain scepticism and a lack of confidence in the deductions derived therefrom. For example, some disturbance of the sphincter mechanism in man results from a mere choledochotomy, as is evidenced by the presence of pancreatic ferments in the human bile which drains from the bile duct; the escape of granules of

* The second and concluding part of a Hunterian Lecture delivered at the Royal College of Surgeons of England, June 18, 1942.

carmine, etc., as shown by Bond, also suggests the derangement of sphincter action effected by a minor mundane manœuvre. The accuracy of results in experimental work which involves incision and intubation of the bile duct must therefore be always open to criticism.

The Pharmacological Method of Approach

Major Hilary Long (1942) has ingeniously endeavoured, by means of carefully conducted pharmacological perfusion experiments upon the biliary ducts, to differentiate purely sphincter effects from those produced by the activity of the duodenal musculature, and claims by her research to have demonstrated an intrinsic choledochal sphincter acting "independently" of duodenal tone and peristalsis in the dog. The pitfalls and difficulties of the experimental method have already been sympathetically referred to; yet very suggestive and illuminating is her contention that the concentration of bile salts and the alkalinity of the bile produce relaxation of this special sphincter; thus the sphincter may be closed to the efflux of bile which is not of the appropriate reaction and concentration, and a train of untoward circumstances be inaugurated.

The Anatomical Approach

The arrangement of the muscle fibres round the intramural portion of the duct has been investigated by different workers employing histological methods or the dissection-microscope on material preserved and prepared in diverse fashions. There has been little unanimity of opinion since the time of Oddi, who claimed in 1887 to have demonstrated a more or less distinct band of circular fibres encircling the "portio intestinalis" of the duct, which, apart from some slender loops that lose themselves between the fibres proper of the gut, are almost independent. Hendrickson (1898) as a result of dissection both described and depicted an intrinsic circular sphincter in man, dog, and rabbit; Boyden and his co-workers in text and illustration have described an intricate web of muscle fibres surrounding the duct which are separable into definite collections and for which a very special nomenclature has been coined; nevertheless, these workers neither discuss nor depict any circular fibres near the papillary orifice, such as have been mentioned and figured by Hendrickson, Newman (1931, 1933), and others. Broman (1921) mentioned a well-formed intrinsic sphincter in the foetus of the Antarctic whale, and Helly (1899) also emphasized its existence in human anatomy. On the other hand, Auster and Crohn were unable to demonstrate any distinct intrinsic sphincter.

My colleague Prof. John Kirk kindly interested himself in the subject on my behalf, and investigated *adult and foetal human material* both histologically and by dissection, and has afforded me ready and willing access to his preparations. We have assured ourselves that in no specimen examined histologically was any circular arrangement of muscle fibres found at or near the opening of the common bile duct on the duodenal papilla. Muscle can be seen in considerable amount on the more basal portion of the intramural duct; but this is oblique and longitudinal in its arrangement, and can be definitely and indubitably traced in continuity with the circular muscle coat of the duodenal wall; in other words, when the duct pierces the outer wall of the duodenum it carries in some of the circular muscle fibres of the duodenum, which are now arranged in an oblique and longitudinal fashion in the wall of the duct itself. The muscle of the duct is abundant in its basal intramural portion, and bundles of the longitudinal muscle fibres can be traced into the connective-tissue core of many of the villous processes.

It was subsequently realized that our findings are very closely comparable to those of Dardinkski (1934-5), who reported: (1) the greatest constriction of the common duct is produced by the intestinal muscle; (2) the independent muscle fibres described by Oddi as responsible for sphincteric action are longitudinal or oblique, and not circular. He also (3) drew attention to the muscle fibres in the villi and suggested that they may play an active part, and (4) noted the mucous gland which we had observed as a most conspicuous feature in histological examination of the terminal bile and pancreatic passages. Furthermore, microscope-dissection of the lower extraduodenal part of the common bile duct shows the presence of well-defined longitudinal muscle fibres which pass deep to the longitudinal muscle of the bowel and become directly continuous with the circular coat of the duodenum. The longitudinal and oblique arrangement of the muscle fibres in the duct wall would seem to indicate that the papillary muscle acts as a retractor of the papilla; and this action, in point of fact, can be readily seen in operations in man which involve opening of the duodenum. This initial retraction of the papilla is followed by the biliary efflux from the ostium and inspection of its postero-internal wall.

The muscle bundles in the villi by their contraction may stiffen these structures and secure their closer apposition, in a manner comparable to the disposition of the human fingers assuming what is termed the "accoucheur's hand"; on the other hand, the temporary intermittent shortening of the villous processes by the action of the contained muscle fibres may aggregate them into a clump or cluster which prevents regurgitation of the duodenal contents, and, acting in co-ordination with the circular tunic of the duodenum, temporarily holds up the issue of bile. Kirk and I have also satisfied ourselves that no circular arrangement of fibres exists in the hepatic duct in either adult or foetal material; there is no evidence of an anatomical sphincter here, despite cholangiographic suggestions of a "physiological sphincter" (Mirizzi, 1940).

An embryological approach towards solving the question of a separate intrinsic sphincter has been employed by Boyden and Schwegler (1936, 1937) with exemplary thoroughness. They claim that the musculus proprius of the duct differentiates *in situ* from the mesenchyme and *is not an emanation from the duodenal musculature.* It is admitted that where the duct penetrates the gut wall the margins of the "fenestra" contribute a few scattered fibres to the outer longitudinal coat of the sheath, but that the inner circular coat round the lumen of the duct is exclusively intrinsic in origin. These authors, as a result of their studies of the foetal and adult stages, mention "fasciculi longitudinales," but, unlike Kirk and myself, pay far more attention to an annular sheath of intrinsic muscle round the duct, and also describe a "sphincter ampullae"(!).

The Comparative Approach

Like any other discipline the "comparative" method is not without its dangers and pitfalls: generalizations drawn from the dissection or examination of a single specimen are apt to be misleading: the law of variation obtains in the subhuman as well as in the human type. The concepts of human anatomy are based upon numberless dissections of myriads of material; it is essential that museums of comparative anatomy should assemble ample store material, to be held at the disposal of research workers. The so-called "Physiological Series" of the old Museum of the Royal College of Surgeons of England contained much that constituted an illuminating basis and background of the anatomy of man.

My "comparative" interest in this region concerned itself initially with the involution of the so-called "ampulla," which in point of fact is an infrequent abnormality in man. The beautifully arranged physiological series in the lamented Museum in Lincoln's Inn Fields afforded strong evidence that the "ampulla" is an involutionary anatomical structure, and it may be possible some time to produce and publish morphological evidence in support of this view. But a study of the collection referred to also furnished here and there naked-eye evidence that the muscle surrounding the terminal part of the bile duct originates from the intestinal musculature: elementary embryology would indeed suggest such a derivation.

No comprehensive comparative histological study has been possible during the war, but careful examination of such selected material as time has permitted indubitably confirms the genesis of the muscular sheath of the "ampulla" from the muscular coats of the duodenum in at least certain types; for example, the origin of the bile-duct musculature in the circular coat of the duodenum is apparent in the lion and tiger cub, and Prof. John Kirk has made extensive researches in the cat. In this animal, where the duct pierces the duodenal wall the circular muscular coat becomes greatly thickened and is indeed several times thicker than the circular coat of the bowel at a short distance proximally and distally. In this region where the circular coat is so markedly thickened Auerbach's plexus is distinctly enlarged, and clumps of ganglion cells may be seen

collected in that area in much greater numbers than in the duodenal wall elsewhere. The muscular thickening and the concentration of ganglion cells must indicate increased muscular action where the common bile duct penetrates the circular coat of the bowel from without. No sign of any intrinsic circular muscle ring round an ampulla has been discernible. It is hoped that in the future further comparative histological investigation

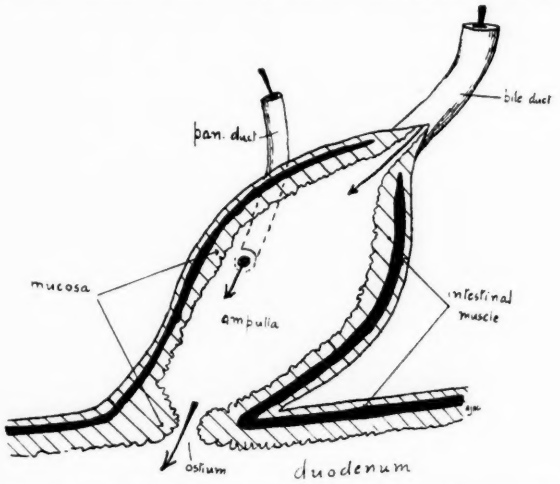

FIG. 3.—Civet (*Viverra civetta*): R.C.S. Museum (store specimen). Wall of ampulla formed by muscle of duodenum, which ceases abruptly at apex of ampulla. No muscle in walls of pancreatic and biliary ducts. (I.e., ampulla = intestinal pouch, not a mere dilatation of lower end of ducts.) (Cross-hatching indicates cut surfaces.)

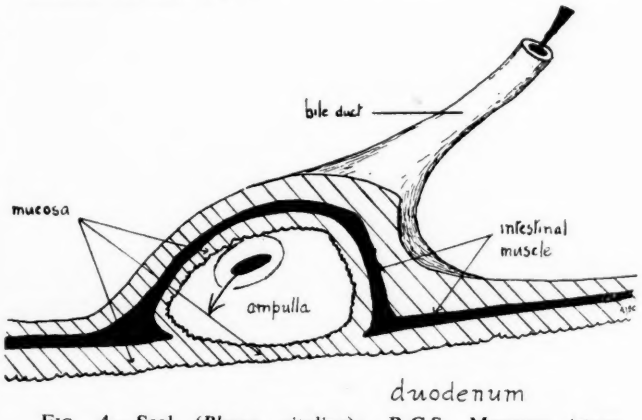

FIG. 4.—Seal (*Phoca vitulina*): R.C.S. Museum (store specimen). Ampulla wall formed of intestinal muscle, which is confined to the pouch and does not extend into the bile duct. (Cross-hatching indicates cut surfaces.)

may be carried out. But there is also macroscopic evidence of such a muscular relationship: thus in certain of the Carnivora—e.g., *Viverra civetta*—and in some Pinnipedia—e.g., *Phoca vitulina*—it is abundantly clear even to the naked eye that the muscular coat of the ampullated duct takes origin from the intestinal muscle tunics (Figs. 3 and 4).

Summary

This paper comprises two sections of a recent Hunterian Lecture.

It emphasizes the low grade of malignancy of many tumours of the lower end of the common bile duct and adjacent head of the pancreas, and appeals for more radical measures in this type of case. Several personal cases of resection are quoted, and reference is made to those of other surgeons.

The diverse methods of scientific investigation lend support to the view that a special intrinsic sphincter exists at the terminal portion of the common bile duct or the conjoined bilio-pancreatic duct.

The muscle sheath of the duct is derived from the circular muscle tunic of the duodenum.

Although circular muscle derived from the bowel tunics is to be found round the basal portion of the intramural duct, only longitudinal and oblique fibres are present in the distal portion of the papilla.

Some of these fibres are prolonged as a core into the villous processes with which the wall of the terminal segment of the duct abounds.

The direction and arrangement of these fibres shows that their action is partly to retract the papilla and partly to erect or to aggregate the villous processes centripetally, thereby preventing reflux from the duodenum and controlling the exit of bile.

There is no circular arrangement of fibres close to the ostium —a reputed disposition credited with mythical properties.

There are few muscular fibres in any of the extrahepatic biliary ducts, and certainly no circular disposition of muscle fibres forming a sphincter in the hepatic duct.

The kindly co-operation of Prof. John Kirk and of Prof. A. J. E. Cave has been invaluable in the preparation of this lecture; my warmest thanks are due to both these friends for all their help so spontaneously and enthusiastically given. Mr. S. R. Scarfe of the Anatomical Department, Middlesex Hospital, has prepared the innumerable histological sections which have formed the basis of part of this inquiry, and to him I am indeed most grateful. My friend Col. A. E. Hamerton has generously afforded me material from the Gardens of the Zoological Society. Surgeon Commander W. A. Hopkins, R.N., and members of the staff of the pathological department of a naval hospital have readily and eagerly granted me facilities for work in their laboratory. Surgeon Vice-Admiral Sir Sheldon Dudley has always a stimulating effect on any worker, and at all times encouraged me, so that the occasional minutes and hours of surgical inactivity inevitable in war have not been idly spent, and an endeavour has been made to carry on, though feebly, the spirit and tradition of the Founder of our Museum, who seized the fleeting hour for Science, even amidst the distractions and disorders of war.

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ENTERITIS IN A NURSERY HOME ASSOCIATED WITH GIARDIA LAMBLIA*

BY

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AND
G. S. WILSON, M.D., F.R.C.P., D.P.H.

The following account of a prolonged outbreak of enteritis associated with *Giardia lamblia* (*G. intestinalis*), affecting both children and adults in a nursery home for evacuees, is reported partly because little attention seems to have been paid in Great Britain during recent years to infections with this protozoon and partly because there is reason to suspect that the condition is commoner than is generally supposed.

History

The outbreak occurred in a spacious country-house, referred to as the Grange, used both as a family residence and as a wartime nursery. The domestic arrangements of the two communities were separate, but there was naturally a good deal of communication between the two sides of the house. Consequently, the entire population, numbering 51 in Jan., 1941,

* A Report to the Medical Research Council from the Emergency Public Health Laboratory, School of Pathology, Oxford.

was exposed to the infection, and 86% showed signs or symptoms as a result.

The infants, 31 in all, of both sexes, and aged at the time of admission from 4 to 16 months, came from poor working-class homes in or about London. They were cared for by eight nurses under the supervision of a matron with special paediatric training. The nursery accommodation was ample and reasonably well adapted to its purpose, and the management of the children very satisfactory, so that a detailed description of the hygienic arrangements may be omitted. The first batch of infants arrived at the home on July 18, 1940, in good health. Included were twin sisters aged 16 months and a boy of 13 months, all of whom had loose stools on July 29; these were the first to be recorded. Within another week 3 more, and within six weeks all the infants, had loose stools. Further infants joined the nursery in Aug., Sept., and Nov., 1940, and in Jan., 1941, and all but 3 became similarly affected within a month—2 within as short a period as seven days and 2 within nine days.

Some of the adults soon began to have diarrhoea as well. Two nurses were attacked early in August, and other nurses, and the family in residence and most of their servants, in the months that followed. Symptoms in the nurses appeared within 10 days to 8 weeks of their arrival. Several months elapsed before some of the house servants had diarrhoea, but this can probably be explained by the fact that they had less contact with the children than the nurses and the private residents.

Between July, 1940, and Jan., 1941, 28 out of 31 infants were affected and 16 out of 20 adults. The more intensive phase of the outbreak extended from Aug. to Dec., 1940, during which time additional children arrived at the nursery in small groups. From Jan., 1941, the acute episodes were less in evidence, but the trouble continued to smoulder until May, when treatment put an end to it.

Symptoms

Infants.—In nearly all cases the earliest sign of infection was looseness of the stools. This did not at first arouse anxiety. The infants were given grey powders and were not confined to bed. A few of them rapidly got worse. The stools became fluid, pea-soup or dark green in appearance, and increased in number up to ten a day. No blood was seen. There was repeated vomiting, dehydration, loss of appetite and weight, and sometimes a rise of temperature to 100° F. In one case at least there was severe abdominal pain and tenderness. Recovery from this acute phase took place in a few days, but was sometimes delayed for two or three weeks. These urgent symptoms appeared quite soon in some of the infants, but in others they were preceded by a mild form of diarrhoea for several weeks. In all, 9 infants were severely ill; 2 of them had to be removed to hospital, where they died. In the remaining 19 infants the initial symptoms were less striking. Once started, the enteritis continued for a few days to a month or more. The stools were generally loose, though persistently fluid in a few cases, brown or green, often with a noticeable excess of mucus, but without blood, and numbering two to four in the 24 hours. Some of the infants vomited on several consecutive days or intermittently. Systemic effects were mild, and the infants were not confined to bed. A chronic stage followed the initial acute or subacute attack, except in the 2 fatal cases and in 2 that cleared up completely. In 7 cases diarrhoea was persistent till therapy was instituted. Soft green or brown stools were passed every day. One of the patients had loose green stools for seven months, and 3 whose stools were always fluid suffered impairment of appetite and growth. In the remaining cases the diarrhoea was intermittent, taking the form of subacute attacks lasting for two to four days or longer, every few weeks. Again the stools were loose, green or brown, or else fluid. As the attacks subsided in some of the infants the stools became large, soft, and white before they were normal.

Adults.—Of the adults affected 6 were nurses, 4 were members of the resident family, and 6 were servants in their employment. Only 3 nurses and 1 servant appear to have been free from symptoms. In general, members of the nursing staff were the first to be affected, and the domestics the last. The onset was somewhat different from that in the children. There was no prodromal period of mild diarrhoea, but a sudden acute and usually violent attack of diarrhoea accompanied by more or less severe abdominal pain. The stools were dark, very loose or fluid, and numbered 10 to 20 or more in the 24 hours. Blood was never noticed. The pain was of a griping nature, usually in the lower abdomen, but in some patients located in the epigastrium or the right hypochondrium. Vomiting was frequent. Additional symptoms in order of frequency were giddiness, loss of energy, weakness or faintness, anorexia, headache, nausea, flatulence, backache, and fever. When the attack was over there was usually a rapid convalescence. About one-third of the 16 adults affected had one attack, a like proportion had two, and the remainder three attacks before treatment. The interval between the attacks varied from four to eight weeks. One nurse had prolonged attacks at short intervals over a period of three months. She kept at her work, but suffered from lack of energy and "pain in the stomach and back, especially when carrying anything or making the cots." Two other nurses stated that after their last attack they had never been really free from diarrhoea, and often felt weak and faint. These nurses had apparently entered a chronic symptomatic stage of the infection like the children. The other adults felt perfectly well between attacks, and many of them remained free of symptoms for some months. No physical examination of the adults was made either before or after treatment, as all were engaged in their affairs and none was acutely ill when seen.

Bacteriological Investigations

At the request of Dr. Cowan, medical officer of health, Gloucestershire County Council, the Oxford laboratory was asked to investigate this outbreak. The Home was first visited on Jan. 29, 1941. Bacteriological examination of the stools at a neighbouring laboratory had shown organisms of the paracolon group in several specimens, and it had been suggested that these were probably water-borne. There were two water supplies available for the nursery, and both had apparently been condemned by local analysts. Our investigation of the two water supplies showed that they were collected from a hillside under almost perfect conditions, and both bacteriological and chemical examination confirmed their freedom from excretal pollution.

There were two milk supplies—one to the nursery and the other to the private residents. A sample from the nursery supply proved to be of relatively poor bacterial quality. Since, however, all milk and water for the children was boiled, it was difficult to believe that they could be responsible for the outbreak.

Specimens of faeces from 25 children and adults were examined for organisms of the dysentery and *Salmonella* groups, with completely negative results. Blood serum from 4 of the adults was tested for agglutinins against organisms of the *Salmonella*, dysentery, *Brucella*, *Proteus X*, and *Leptospira* groups—again with negative results. Further faecal specimens were obtained in February from 8 children with recent or current diarrhoea, special arrangements being made for their receipt at the laboratory within a few hours of collection. These were examined for protozoa. Five of them contained *Giardia lamblia* in either the free or the cystic form, three in very large numbers. Since, according to Dobell (1921), the infection rate in this country is between 4% and 9% for adults and 14% and 40% for children, it seemed desirable to obtain further information on the frequency of this parasite in the Grange. Accordingly on March 3, 1941, specimens of faeces were examined from 29 children and 22 adults.

The method we used consisted in rubbing up a small portion of the faeces on a slide in a 1% solution of eosin with a wooden toothpick or platinum spatula, so as to make a moderately opaque suspension. A cover-slip was applied, and the preparation was examined at once under a 1/6-inch objective. This method has the advantage of providing a pink background, against which the unstained protozoa can be distinguished readily by contrast. *Giardia* appears as a pear-shaped body about 10 to 20 μ long by 6 to 10 μ wide in the free form, and 10 to 13 μ by 8 to 9 μ in the cystic form, having a faint bluish tinge. Little structure is visible, but if a second preparation is made in a drop of Lugol's iodine, the nuclei, the axostyles,

and other details can often be seen. The results of our examination are recorded in Table I.

TABLE I.—*Frequency of Giardia lamblia in Faeces*

	No. Examined	No. Positive	% Positive
Children ..	29	13	45
Adults	22	6	27
Total ..	51	19	37

The proportion of children carrying *Giardia* was higher than that of adults. Taking both together, no less than 37% of the 51 persons examined proved to be infected. An analysis of these figures was made in relation to (1) the presence of loose stools at the time of examination, and (2) a history of continual or intermittent loose stools for some months previously (Table II).

TABLE II.—*Frequency of Giardia lamblia in Relation to Diarrhoea*

	No. of Patients	Positive		Observed % Difference between the Two Groups	Standard Error of this Difference	Observed % Difference divided by its Standard Error
		No.	%			
A. Loose stools at time of examination	7	5	71	39	18·5	2·1
B. No loose stools at time of examination ..	44	14	32			
C. History of intermittent or continual loose stools for some months ..	11	9	82	57	13·5	4·2
D. No history of intermittent or continual loose stools for some months ..	40	10	25			

From Table II it is seen that the proportion of persons harbouring *Giardia* was more than twice as great in those with loose stools at the time of examination as in those without. The numbers, however, are small and the odds against getting such a distribution by chance alone are not more than 27 to 1. The proportion of persons harbouring *Giardia* was more than three times as great in those with a history of intermittent or continual loose stools for some months as in those without, and the odds against such a distribution are over 37,000 to 1. There appeared, therefore, to be little doubt that the association of *Giardia* with chronic enteritis was more than coincidental. When it is remembered that Groups B and D were not strictly control groups, practically all the patients in these groups having suffered at one time or another from diarrhoea, the association becomes even more significant. It is hardly necessary, however, to point out that such an association does not prove the causal relationship of *Giardia* to the enteritis, but it does add weight to other evidence that may be brought in favour of this assumption.

Treatment

Since Brumpt (1937) recorded his finding that mice infected with *Giardia muris* could be rapidly freed from infection by the oral administration of quinacrine, several workers have successfully applied this treatment to human beings. Galli-Valerio (1937), Love and Tayloe (1940), Voltrina (1941), Nutter, Rodaniche, and Palmer (1941), and Hartman and Kyser (1941) used atebrin; but de Muro (1939) and Grott (1939) obtained better results with acranil, a hydrochlorate of a new acridinic compound prepared by Bayer. Atebrin and quinacrine, it may be noted, are different names for the same substance. Chemically this substance is an acridine compound related to the antimalarial plasmoquine, but differing from it in the substitution of the acridine for the quinoline nucleus; it has therefore no direct relationship to quinine. Since acranil was unobtainable we decided to try quinacrine.

Six children who were heavily infected with *Giardia* were transferred to a cottage some distance from the Grange and put in charge of two nurses. One of these was heavily infected; the other, who had joined the staff only three weeks previously, had not suffered from enteritis and had no *Giardia* in her stools. All food was prepared in the cottage, and no communication, except by the matron, was permitted between the inhabitants of the cottage and those of the Grange. Before treatment began, and again after the conclusion of the first course of treatment, the cottage was thoroughly cleaned and disinfected.

Tablets containing 0.1 g. of quinacrine were obtained from Messrs. May and Baker. The children, all of whom were under 2 years of age, were given one-sixth of a tablet, and the infected nurse one tablet, three times a day for five days. As the drug is very bitter the tablets were not pulverized, but were mixed with the food at the end of a meal. A drink of milk was given immediately afterwards. The nurses were instructed to keep the children's bowels well open and to watch for toxic symptoms. These comprise persistent headaches, severe abdominal pain, cerebral excitement, and acute restlessness, and are best treated by the administration of purgatives, large doses of alkali, and plenty of sugar. The first course of treatment lasted from May 12 to May 17, 1941. Examination of the stools on May 19 showed that they were all free from *Giardia*. As none of the patients had suffered from toxaemia, and as the probable duration of the apparent cure was in doubt, it seemed wise to repeat the treatment. This was carried out between May 21 and May 26. Samples of faeces collected on the last day again proved negative.

The success of this treatment, as indicated by the disappearance of *Giardia* from the stools, seemed to warrant its application to the remainder of the children at the Grange. Accordingly 25 children, of whom 13 were known to be infected, and 13 adults, of whom 5 were known to be infected, received a first course of treatment between June 5 and June 10, and a second course between June 15 and June 20. Stools taken on June 11 after the first course and on June 24 after the second course all proved negative. Before and after the first course the nursery portion of the Grange was disinfected so far as possible in order to reduce the opportunity for reinfection. Apart from insomnia in some of the adults, and occasional slight yellow coloration of the skin and urine, no untoward effects were caused by the drug.

The stools of many of the patients were re-examined at intervals up to Feb., 1942. During this time only two of the previously positive children relapsed or became reinfected—it was impossible to say which. One showed a few *Giardia* in the stools in Aug., 1941, and the other a very scanty infection in Feb., 1942. Two fresh cases, however, were detected in children and one in a nurse whose stools had been repeatedly negative. These occurred in July and Aug., 1941, and in Feb., 1942. All five cases cleared up at once after a single course of quinacrine treatment. So far as the elimination of *Giardia* infection was concerned the treatment was undoubtedly successful. The failure to achieve complete sterilization may perhaps have been due to the presence of infection in two or three of the adults who were unwilling either to provide stools for examination or to undergo treatment.

Clinical Results of Treatment

Before treatment started, and again 8 to 9 months later, the children were physically examined, and blood counts were made on a number of those who were most heavily infected. At the first examination, 5 to 9 months after their admission, most of the 31 infants were fairly well nourished, but 26% had skin infections of one type or another, including eczema, and in 40% muscle tonus was poor. Many of them had diarrhoea or loose stools at the time, or gave a history of enteritis in the recent past. At the second examination their nutritional state and general well-being had improved; only 4% now had skin infections, and muscle tonus was good in all but 16%. Diarrhoea had ceased for several months and loose stools were unusual. We had hoped to find out whether the beneficial effect of treatment was reflected in the rate of growth, but we were unable to make use of the figures available because the weight and height of the infants were taken at irregular intervals, and the numbers falling into appropriate age periods were too small for comparison with normal standards. In the adults diarrhoea had likewise ceased, and those who had previously suffered

from abdominal discomfort, weakness, giddiness, and anorexia now appeared to be quite well again.

Before treatment the average number of red blood cells in 7 of the infected infants studied in April, 1941, was 4,700,000 per c.mm., and of white blood cells 8,100 per c.mm. After treatment the corresponding figures obtained in Feb., 1942, on the same infants were 4,800,000 per c.mm. and 11,000 per c.mm. respectively. These differences are of little importance. The haemoglobin content of the blood, on the other hand, showed a considerable rise. Before treatment the figures varied from 60 to 88%, with an average of 74%, and after treatment from 80 to 94%, with an average of 85%, thus showing an average increase of 11%. Before treatment some degree of hypochromasia, polychromasia, and basophilic stippling was common, whereas after treatment the red cells were normal except in one child in which they showed slight anisocytosis. A remarkable feature of the differential white cell counts in Feb., 1942, was the finding of a mild degree of eosinophilia, varying from 4 to 14%. Observations on two occasions for *Enterobius* made by the cellophane swab technique were negative, so that a helminthic infection seems improbable. What the explanation is must remain undecided, but it is thought worth while reporting this finding in case others meet with a similar degree of eosinophilia in *Giardia* infection treated with quinacrine.

Discussion

It is not our purpose here to discuss in detail the evidence for and against the pathogenicity for man of *Giardia lamblia*. Those wishing for fuller references should consult papers by Lyon and Swalm (1925), Véghelyi (1938), Manson-Bahr (1940), and McGrath, O'Farrell, and Boland (1940). Opinion is divided between those who regard this organism as a harmless parasite and those who believe that it may give rise to symptoms of disease.

So far as children are concerned one of the most careful of recent studies is that of Véghelyi (1938, 1940), who made observations on 92 infected and 92 control children aged 2 to 17 years at the children's clinic, Budapest. He found that in the infected subjects the occurrence of anorexia, headache, dizziness, abdominal pain, irregular bowel movement, and anaemia was much more frequent than in the controls. Of the infected children 86% were below average weight and 75% showed signs of disease. Studies in the laboratory revealed that fat absorption was defective, and that excretion of biliary pigment in the urine was much below normal. Véghelyi attributes this to the mechanical effect of the parasites in covering to a greater or less extent the wall of the intestine and rendering it impermeable. The resulting interference with absorption he regards as being sufficient to account for the anaemia and retardation of development. Great clinical improvement followed eradication of the organism by acetarsone.

Hartman and Kyser (1941), who described 100 cases of *Giardia* infection at the Mayo Clinic, all but 5 of the patients being over 14 years of age, found that 89% had symptoms of illness. The commonest complaints were diarrhoea and abdominal pain. In a small number of cases which were treated with atebrin and followed up, clinical cure resulted. Nutter, Rodaniche, and Palmer (1941), in a study of 14 infected adults, noted the following symptoms in order of frequency: diarrhoea, fatigue and weakness, abdominal pain and flatulence, blood in the stools, insomnia, dizziness, nervousness, and loss of weight. The symptoms disappeared after treatment with atebrin.

Our own observations support the conclusions of other recent workers in indicating that *Giardia* infection may not be without a detrimental effect on the health of the patient. It is difficult to estimate the exact part played by this organism in causing enteritis at the Grange, since other causes cannot be excluded with certainty. During the last two or three winters a disease, which for want of a better term we refer to as "non-specific enteritis," has been common in many parts of the country, giving rise to acute transient attacks of vomiting and diarrhoea. Opportunities for a thorough examination of cases have been few, but so far we have failed to find any evidence of bacterial or protozoal infection. This disease may have been responsible for some or all of the acute cases of enteritis at the Grange, though probably not for the chronic cases. The higher frequency of *Giardia* in the patients suffering from chronic diarrhoea than in those with normal stools is very suggestive; but too much weight should not be put on this finding alone, since there is presumably a greater chance of finding cysts in the faeces when the stools are loose than when they are normal. Taken, however, in conjunction with the clinical improvement after treatment, it does suggest fairly strongly that the presence of *Giardia* was more than a fortuitous association.

Undoubtedly one of the factors that has most influenced recent opinion in favour of regarding *Giardia* as potentially pathogenic is the disappearance of symptoms, even of long-standing diarrhoea, after treatment with one of the new specific remedies. Such an observation was not possible for a worker like Boeck (1927), who, on statistical grounds alone, was unable to satisfy himself that *Giardia* was more than a harmless parasite.

How infection was introduced into the Grange is not known. The matron who opened the nursery, and who shortly afterwards left, was suffering from enteritis on her arrival; she may have been responsible, but this can be no more than a surmise.

Summary and Conclusions

An outbreak of enteritis, much of it of a chronic type, affecting a high proportion of both children and adults in a residential nursery for evacuees is described.

Giardia lamblia was found in 71% of children and adults having loose stools at the time of examination and in only 32% of those with normal stools.

Giardia lamblia was found in 82% of children and adults with a history of intermittent or continual loose stools for some months and in only 25% of those without such a history.

Cure of the infection was quickly and successfully accomplished by the use of quinacrine, given in two 5-day courses.

The symptoms—chronic diarrhoea and some degree of anaemia in the children, and diarrhoea with giddiness, loss of energy, anorexia, headache, and epigastric discomfort in the adults—disappeared after treatment, and the general nutrition of the children improved.

The high frequency of *Giardia* in the stools of the patients with long-standing diarrhoea and the favourable effect of treatment suggest that this organism may have been responsible for the chronic enteritis observed in the nursery. Further observations, however, are necessary to establish the exact degree of pathogenicity of *Giardia* for man.

We should like to express our thanks to Dr. Cowan, Dr. Goodwin, Dr. Gordon, Lady Ismay, and Sister Houchin for their generous help in this investigation. We are particularly indebted to Prof. Leiper of the London School of Hygiene and Tropical Medicine not only for his frequent advice but for showing us an advance copy of the report to the Medical Research Council on the incidence of protozoa and helminths in the faeces of certain groups of the population in this country which Miss Young made while working in his department.

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F. Clifton and S. M. Laird (*J. R.A.M.C.*, 1941, **77**, 318) record two cases of acute meningococcal conjunctivitis in soldiers aged 21 and 23. In both a diagnosis of gonococcal conjunctivitis had been made before admission to hospital, but the absence of any evidence of infection in the genito-urinary tract suggested that the correct diagnosis was one of meningococcal conjunctivitis. One patient had received sulphapyridine before cultures were made, but in the second case the diagnosis was confirmed by bacteriological examination. Neither case showed clinical evidence of involvement of the cerebral nervous system.

TIETZE'S DISEASE

(NON-SUPPURATIVE NON-SPECIFIC SWELLINGS OF RIB CARTILAGE)

BY

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In 1921 Tietze described 4 patients aged from 28 to 50, 3 females and 1 male, who all showed the same clinical picture—viz., swellings of costal cartilages of insidious onset associated with little or no constitutional disturbance, spontaneously painful, and with a prolonged course characterized by fluctuations in the size and tenderness of the swellings. Though one case was followed for over a year, no signs of suppuration developed. The lesions were firm and were confined to the cartilages, which appeared to be expanded locally. The skin over them was normal and freely movable. In one case the intercostal space was filled by the mass. In two patients, aged 42 and 50, radiographs showed calcification of the cartilage, but this may have been coincidental.

In reporting these cases Tietze stressed his ignorance of their nature and the fact that, although he had encountered them all in a short space of time, he had not previously seen a similar condition and could find no reference to earlier descriptions of such cases. Following Tietze's paper, Harttung (1923) described a very similar case which he also had seen in 1921. Radiographs disclosed no changes, but biopsy of part of the diseased cartilage revealed calcification and fibrosis. He referred also to another case reported in 1921 at the Medical Society of Breslau by Froehlich, in which four rib cartilages were involved and which had developed during the course of one year. At the same meeting Kuettner, in the discussion on this case, mentioned several similar cases, in one of which biopsy showed small nodules consisting of fibroblasts and many giant cells.

No further references have been found in the literature since that time, except for a paper by two Japanese authors, Satani and Fujii (1937), who reported 9 cases of Tietze's disease occurring in under-nourished women. Radiographs showed in one case atrophy of the rib cartilage, and in another shortening of the rib and calcification of the cartilage; in all other cases radiology revealed no abnormality. Biopsy in these cases revealed fibrosis, ossification, and atrophy, there being neither granulation tissue nor pus.

During the last few months we have observed 5 young soldiers showing the syndrome described by Tietze, and owing to its rarity we have considered these cases worthy of record. That this condition should have been encountered so frequently in such a short period indicates that at present it is no longer so rare as the scarcity of references suggests. Personal communications tend to support this contention and confirm its former rarity.

Case Reports

Case 1. Aged 27.—Six days before admission the patient had noticed a tender swelling in the left upper chest, followed three days later by malaise, shivering, fever, cough, and pain in the left chest. Previous health good. On admission: temperature 102°; signs of bronchopneumonia at both bases. There was a visible swelling of the second left costal cartilage at the costo-chondral junction. This was of firm elastic consistency, and arose from the second cartilage, but its upper limits were ill-defined and extended upwards to become continuous with the first costal cartilage. It was tender on pressure, but not spontaneously painful. The overlying skin was normal. Radiographs showed no abnormality. With treatment, including sulphapyridine, the bronchopneumonia resolved, but the lump, though less tender and slightly smaller, remained four weeks after the onset. However, when last seen, some four weeks later, there remained only a slight thickening of the costo-chondral junction and there was no tenderness. *Investigations:* Blood W.R., negative; white cell count and differential, normal; B.S.R., normal; sputum, nothing significant; Widal, negative.

Case 2. Aged 24.—Admitted complaining of cough and pain in the left chest, the latter of two weeks' duration. A comrade had called his attention to a lump in the left upper chest at the time of onset of the pain. On admission he was afebrile, and presented the signs of chronic bronchitis and emphysema. A swelling was visible at the second left costo-chondral junction—firm, smooth, and tender on pressure. Spontaneous pain was not present. The overlying skin was normal. Three weeks later, when last seen, the lump was smaller and was no longer tender. *Investigations:* No material could be obtained on needling; culture, sterile; radiograph, negative; Widal, negative; white cell count and differential, normal; B.S.R., normal; sputum, pneumococci predominant; blood W.R., negative.

Case 3. Aged 21.—Developed bronchitis following appendicectomy, and, five days later, pain in the left chest. Temperature 99°. Six days after this he noticed a swelling of the chest, and on examination there was a visible prominence in the region of the seventh rib cartilage, extending about 2 in. along the costal margin and involving the sixth and eighth cartilages. The swelling was hard, and was confined to the cartilages, the intercostal spaces being normal. On discharge some three weeks later the tenderness had gone, but the swelling was still present. As in the previous cases, all investigations were negative.

Case 4. Aged 29.—He had noticed, ten days after pneumonia, a painful tender swelling in the right upper chest. This to a large extent subsided during the next two months, but a month later, following a common cold, it reappeared, and on admission to hospital a diffuse, smooth, firm, tender, ill-defined swelling was visible and palpable in the right upper chest, involving the first, second, and third costal cartilages and filling up the intercostal spaces. Laterally it extended to the anterior axillary line. The overlying skin was normal. There was no fever. This patient has been observed over a total period of nine months, during which time the pain and tenderness, and the size of the swelling, have altered only slightly, the condition remaining substantially unchanged to date. Occasionally there has been fever up to 99°. *Investigations:* B.S.R., 8 mm. in 1 hr. (Westergren); white cell count, normal; blood W.R., negative; Widal, negative; blood calcium, normal; radiographs showed soft-tissue shadow in the region of the swelling, but no bony abnormality; needle exploration, negative.

Biopsy of Case 4 (Mr. John E. Rowlands).—At operation an incision was made directly over the third right costal cartilage extending 4 in. laterally from the edge of the sternum. There was a spindle-shaped enlargement of the cartilage. The intercostal spaces above and below were encroached upon by this swelling, but were clearly definable from it. The tissue of the spaces was oedematous and abnormally vascular, but was not infiltrated by the tumour. The swelling was incised and a wedge-shaped piece removed. It had the appearance of normal cartilage.

Histology of Case 4 (Dr. A. M. Barrett).—The section showed an unmistakable resemblance to cartilage, the cells being enclosed in spaces in the typical cartilaginous matrix. Along one border (apparently the periphery of the nodule) the cells were flattened and small, and at the extreme edge here the appearance of the tissue approached that of collagenic fibrous tissue; elsewhere in the section the cells were for the most part much larger, and the matrix stained more deeply with haematoxylin. Here, too, the cells were not arranged so regularly in pairs, groups of 6 to 8 cells being frequent. A few rather wide blood spaces and more abundant smaller ones were present; also areas (apparently corresponding to the opaque streaks seen with the naked eye) having a fibrillar structure, and as the fibres stained deep red with van Gieson's stain they were presumably collagen fibres. There was no evidence of inflammation.

Conclusion.—The nodule was composed of cartilage, and on histological grounds alone it would be difficult to say that it was not a piece of normal costal cartilage. However, it would do equally well for a chondroma.

Case 5. Aged 19.—Developed rheumatic fever with pneumonia following tonsillectomy, and seven weeks later complained of pain in the second right costo-chondral junction, examination of which revealed a firm tender swelling in every way similar to those previously described. Ten days later the pain and tenderness had disappeared, but a slight enlargement of the costo-chondral junction persisted. As in the other cases, all investigations were negative.

Commentary

In an analysis of the relevant literature it is unnecessary to refer to the frequent accounts of osteomyelitis of ribs due to typhoid, tuberculosis, syphilis, or pyogenic infections, as in the cases here reported there was no evidence of any bone disease. With regard to conditions confined to rib cartilage, Staehelin (1940) remarks that little is to be found on this subject in the literature, and we have been unable to trace any reports in English of cases similar to the above.

It is evident that, clinically, the cases here recorded closely resemble those described by Tietze and subsequent authors, and it seems probable that they represent the same morbid entity. The association with respiratory tract infections has not previously been noted. In each case the swelling was noticed by the patient himself or by a friend, and clinically it could not be disregarded. No fever which could not be attributed to other causes was present, except in Case 4. In each instance the swelling persisted for some time after the respiratory infection had subsided, and we were unable to observe complete return to normality in any case before discharge from hospital; indeed, Case 4 still presents symptoms and signs nine months after the onset. Special investigations have failed to throw further light on the aetiology of the syndrome.

With regard to the morbid anatomy, in a description of the biopsy findings Tietze writes: "The histological examination shows chondral tissue, the irregular arrangement of which suggests neoplasm, but there are no signs of malignancy. I therefore removed the entire mass, which consisted of two cartilages and part of the sternum. To our surprise the cartilages were not abnormal; the soft tissues, perichondrium, muscles, fascia, and ligaments were thickened, but microscopically did not show any inflammatory changes. The cartilages showed histological changes, described above, and here and there calcium deposits and dissolution into fibres." The similarity of this description to the findings at biopsy in Case 4 of our series is striking.

In discussing the aetiology Tietze tentatively suggested that the condition represented a dystrophic change in the cartilage analogous to the bone disease of nutritional origin which was prevalent in Germany in the early 1920's; but there has been no evidence of malnutrition in our patients, all young soldiers of good physique.

We cannot throw any light on the pathology of these swellings. Tietze's cases were all observed at a time when nutritional conditions in Germany were at their lowest ebb. This does not entirely apply to our cases, since, although the national dietary has altered, it is agreed that evidence of general malnutrition is lacking. Nevertheless, qualitative changes of which we are ignorant may be of aetiological significance.

Summary

An account is given of a syndrome first described by Tietze in which non-suppurative non-specific swellings appear affecting rib cartilage, and 5 cases are added to the 16 already recorded. The association with respiratory tract infections has not previously been noted.

Thanks are due to Dr. F. R. Berridge for the radiological examinations and to Dr. O. Morrey for all other special investigations. Our thanks are also due to Mr. John E. Rowlands and to Dr. A. M. Barrett.

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D. Skinner and J. E. Edwards (*New Engl. J. Med.*, 1942, **226**, 8) record two cases of subacute bacterial endocarditis caused by an enterococcus in men aged 72 and 60. In the first case symptoms of endocarditis followed prostatectomy, and death took place seven months later. The necropsy showed typical vegetations on the mitral, aortic, and tricuspid valves. The organism (strain A) was recovered from the blood, vegetations, and an extracted tooth. In the second case the symptoms developed in a patient who had had cardiac decompensation for six years. The necropsy showed old rheumatic heart disease with vegetations on the mitral valve. The organism (strain O) was recovered from the blood before death and from the vegetations post mortem.

THE CHEMICAL LUMINESCENCE TEST FOR BLOOD

FORENSIC AND CLINICAL APPLICATIONS

BY

JOHN McGRATH, M.D., M.Sc.

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Although it is now some years since Specht (1937) first suggested the use of chemical luminescence for the identification of suspect blood-stains, it would seem that no references to the method have as yet appeared in the English literature. This reaction has been of considerable practical value in many technically difficult medico-legal cases and merits description. Its forensic use has led to other applications, and the clinical adaptation now described is simple and very delicate, though it has the disadvantage that it must be observed in the dark.

Gleu and Pfannstiel (1936) described the preparation of 3-amino-phthalic-acid-hydrazide-hydrochloride, and indicated that the alkaline solution, with the addition of hydrogen peroxide or sodium peroxide, produced a typical chemical luminescence with haematin. This reaction is the basis of the luminescence test for blood. One of two solutions may be used; they yield identical results:

A.	3-amino-phthalic-acid-hydrazide-hydrochloride	1 g.
	Sodium peroxide	5 g.
	Distilled water	1,000 ml.
B.	3-amino-phthalic-acid-hydrazide-hydrochloride	1 g.
	Sodium carbonate	50 g.
	Hydrogen peroxide (10 vol.)	50 ml.
	Distilled water	1,000 ml.

These solutions may show a trace of inherent luminescence. This is of no practical disadvantage, but may, if desired, be eliminated by the addition of a trace of indazolon-4-carboxylic acid. The solutions are effective when freshly prepared, and remain usable for years by the addition of about 10% of 20-vol. hydrogen peroxide to reactivate the quantity of stock solution required for a particular test.

Forensic Application

In medico-legal cases blood-stains are normally identified by close inspection; a chemical test such as the benzidine reaction to exclude negative stains; positive identification of blood spectroscopically and perhaps with the help of various microscopical preparations; determination of the source of the blood by means of the precipitin reaction; and, in suitable cases, possibly identification of the blood group. In a number of cases, however (and not infrequently those in which the evidence as to blood-stains may be of the utmost value), the stains may be obscured for various reasons and the discovery of their position and content may be attended with more or less difficulty. The stains may be small in amount; they may be mixed with mud or ashes, or other interfering substance; they may have been more or less cleaned away off, say, dark or dirty clothes, off the ground, carpet, or walls, or off a weapon, and traces only may have remained in crevices or cracks; they may have been irregularly distributed in small amounts or difficult to discover on the ground, on dark or rusty or soiled or painted objects, or in cellars or other places not easily susceptible to complete and thorough examination; they may have been changed by temperature, weather, and age. In still other instances the blood may be mixed with or simulated by other stains such as paint, oil, fruit juices, rust, etc. In these cases of difficulty the luminescence test is of especial value.

The solution is introduced into an all-glass pressure-spray designed to produce a fine mist from a watery solution. When this mist falls on a stain containing haematin the result is a marked bluish-white luminescence which is clearly visible in the dark. The luminescence persists for some minutes and can readily be photographed. Very fresh blood-stains, con-

taining little haematin, show little luminescence; but the older the stain, and the greater the proportion of haematin consequently present, the more marked and clear is the light effect. The method we use is to spray the suitably arranged suspect articles in a dark-room, or, in a house, to arrange for the room or area to be darkened or to wait for night.

We have experimented with a very wide variety of substances, and have found the reaction to be specific. There is no reaction with serum, bile, sputum, pus, seminal stains, pleural fluid, earth, faeces, fresh or rotting vegetable material, various paints, oils, metals, wood, wax, shoe-polish, or various other substances. Very slight traces of blood-stains containing haematin, and not detectable to the naked eye, are readily apparent with the luminescence test. Nevertheless, in the present state of knowledge it is not suggested that this test should be used as a final specific test for blood. After the site and extent of the stain have been determined, it is essential to proceed through the complete routine examination.

The luminescence test has a special value in this respect—that after its application to detect the site of the blood-stain all of the further necessary tests may be applied to portions of the stain. The spray allowed to fall on the stain is preferably kept minimal in amount, and after marking or photographing the stain it is allowed to dry. The stain is then available for all the usual tests, and we have been unable to detect any difference in the reactions obtainable in stains which have been sprayed with the reagent and allowed to dry and those which have not been so treated. Nevertheless, as an additional safeguard, and to eliminate all possibility of error, we have in practice invariably adopted the precaution of running a control from a portion of the article which has been sprayed but which shows no evidence of staining.

Clinical Application

In the most direct and simple form of the test the fluid or suspension of the material suspected of containing blood is placed in a test-tube. A small amount of the activated stock solution is added, and the resultant fluorescence, if any, is observed in the dark. Faeces may be dried on a slide, and the test solution poured over it as with the benzidine reaction commonly employed.

A positive result depends on the formation of haematin from the blood originally present in the suspect material, and the greater the amount of haematin present the more marked is the reaction. The delicacy of the test in the presence of fresh blood may be enhanced in the following way: To the suspect fluid or suspension are added a few drops of NaOH solution (about 30%), the tube is shaken and haematin is thus formed; the addition of the test solution will then produce a marked reaction if blood is present. Warming increases the brilliance of the fluorescence but shortens the duration.

So employed, the test is remarkably delicate, and will show a clear positive reaction with blood in dilutions over one in a million.

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CARDIAC MASSAGE

AN EXPERIMENTAL STUDY

BY

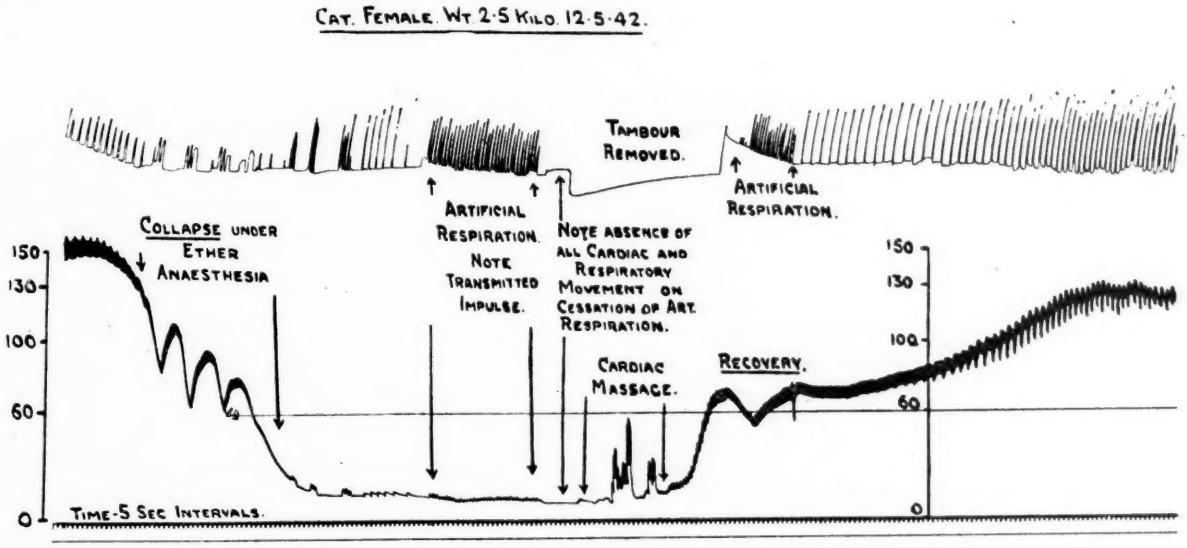
GEORGE A. POLLOCK, M.S., F.R.C.S.Ed.

(From the Wilkie Surgical Research Laboratory, University of Edinburgh)

In the treatment of collapse under anaesthesia Hamilton Bailey stressed the importance of early and prolonged cardiac massage in addition to artificial respiration; the present record demonstrates this from the experimental side.

During an experiment on haemorrhagic shock a cat collapsed from an overdose of ether, after the right carotid artery had been cannulated and the respiratory tambour adjusted, but before bleeding had been begun. Immediately before the collapse respirations were 8 a minute and the blood pressure was 150 mm. Hg. In 6½ minutes respiration had ceased and the blood pressure fell to 14 mm. Hg. Artificial respiration was given by means of a pump; while this was being carried out impulses transmitted to the heart from expansion and collapse of the lungs were registered as minor fluctuations in the blood-pressure tracing. When artificial respiration was stopped these transferred fluctuations also stopped, and there was no sign of either respiratory or cardiac recovery.

So certain was I the cat was dead that I was beginning to dismantle the apparatus, when I decided to try the effect of direct cardiac massage. Two minutes 40 seconds after breathing and heart had stopped, the heart was compressed regularly between the fingers of the left hand, which could be pushed up under the left costal margin, and the right hand, which pressed downwards on the left thoracic wall. After 40 seconds an irregular rhythm returned to the heart; this was registered as an irregular fluctuation on the blood-pressure tracing. Massage was continued for 1½ minutes, after which the heart began to beat regularly. The artificial-respiration pump was reconnected and the respiratory tambour adjusted. For one minute the heart maintained its recovery rate; but after the blood pressure had reached 74 mm. Hg it began to fall, as respiration had not been re-established. Artificial



respiration was begun 15 seconds later (or 1 minute 15 seconds after the heart had started to beat). The blood pressure fell for 15 to 20 seconds longer, to 54 mm. Hg, and then rose steadily. Artificial respiration was continued until, after 1 minute, voluntary spasmodic respiratory efforts began. Nine minutes after the first irregular cardiac contraction the blood pressure had risen to 132 mm. Hg, and there was a corresponding improvement in respiration and pulse pressure.

The tracing gives a graphic record of the sequence of events, and demonstrates in a striking manner the completeness of recovery that may be obtained in cases of severe collapse under anaesthesia when the appropriate treatment is used in time.

Medical Memoranda

Parturition with Fractured Femur

The following case, in which the Roger Anderson method of treating fractured femur was applied to facilitate delivery, seems to be worthy of record.

CASE REPORT

The patient, a normally developed woman aged 27, sustained a simple transverse fracture of the shaft of the right femur in the upper middle third on March 21, 1941. She was treated at first by skeletal traction on a Thomas splint. This overcame the shortening and angulation, but it was found impossible to correct by manipulation a posterior displacement of the distal fragment by nearly one diameter. There was very slow formation of callus. Open operation with onlay bone graft was performed on June 23, when soft-tissue interposition was found responsible for the difficulty in reduction and the delay in union. After this, immobilization in a plaster spica was continued for three months. The patient had had no menstrual period since Jan. 27, and when the plaster was removed she was obviously pregnant. After a period of exercises in bed she was allowed to walk in a calliper, union appearing satisfactory, but she unfortunately refractured the callus and graft shortly afterwards. On Nov. 6 the femur was immobilized by the Roger Anderson half-pin technique, using two half-pins above and two below the fracture, and incorporating the superior and inferior half-pin units in a plaster from groin to knee. This was very comfortable, and the patient was able to sit in a chair.

At this stage she was transferred to the maternity department, and was discovered to have a breech presentation with extended legs which could not be turned by external version. It was decided to let her go into labour, and to perform Caesarean section if there was any difficulty. The foetus was known to be small and the pelvis roomy.

On Dec. 3 she went into labour spontaneously by rupture of the membranes at 10 a.m. Pains began 6 hours later, and the breech was seen at the vulva two hours after that. Delivery was carried out in the lithotomy position, the injured leg being held by a nurse. In this position there was no difference from the delivery of a normal patient. The child was a healthy male of 5½ lb. The puerperium was uneventful.

COMMENT

It would seem that the Roger Anderson method is extremely satisfactory in this complication of parturition, and in fact the only one which gives an absolutely free hand to the obstetrician. There is no reason why delivery should not be carried out in the lateral position if preferred, provided the leg in plaster is uppermost and is suitably held.

With the Roger Anderson apparatus not available, Mr. Norman Capener has recently suggested, and has successfully used, 6-in. carpenters' gimlets instead of the half-pin units. Two gimlets are inserted into the upper fragment so that they lie in two planes and engage in the opposite cortex of the bone. The lower fragment is held by one gimlet and a transfixing Steinmann pin at the lower end. These are all incorporated in plaster from the groin to just above the knee. This method gives a somewhat more bulky plaster; but there is absolute fixation of the fragments, and it has proved very successful.

I am indebted to Mr. Norman Capener for permission to publish the case, and to Mr. A. L. Candler for allowing me to deal with the obstetric side.

G. BLUNDELL JONES, M.B., B.S.,
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Treatment of Plantar Warts

In common with the experience of observers elsewhere I have been struck by the increased number of children coming to my orthopaedic clinic in Rochdale with plantar warts. The treatment of these has in the past been very troublesome and rather unsatisfactory. The opinion has been hardening that these warts are due to an infective agent, the exact nature of which has not been ascertained. Having seen the good results obtained in the treatment of impetigo by covering the patches with elastoplast and leaving the plaster undisturbed for a week or more, I determined to try a similar treatment for these warts. As the infecting agent must be a much less virulent one than in the case of impetigo, I argued that the elastoplast must be left undisturbed for a much longer period in order to get the same effect. I accordingly began to treat plantar warts by covering them with elastoplast. The results have been uniformly good.

Since March, 1940, 17 cases have been seen; of these, 9 have been completely cured (for details, see Table) and 8 later cases are still under treatment. I have used the ordinary 2-in. elastoplast for the feet and 1-in. elastoplast for the toes. Wherever possible the elastoplast has been put right round the foot or toe and overlapped a little, as that makes the bandage more secure. The elastoplast is left undisturbed for at least 3 weeks (longer if possible), and the patients are instructed to keep the bandage dry and when a bath is being taken to keep the foot out of water. At the end of 3 weeks the bandage is removed, the foot cleansed with methylated ether, and a new bandage put on. This treatment is continued until the skin is normal. Quick results must not be expected, but in not one case have we failed to effect a cure.

	Sex	Age (years)	Position of Warts	No. of Applications	Duration of Treatment	Result
1	M	8	Heel of lt. foot, base of rt. gt. toe	4	9 weeks	Cured
2	F	11	Lt. heel	5	12 ,,	,,
3	M	13	Lt. heel, rt. heel, base of rt. gt. toe ..	6	14 ,,	,,
4	F	12	Base of rt. gt. toe ..	7	21 ,,	,,
5	F	13	Under right metatarsal heads	6	14 ,,	,,
6	M	13	Both heels	4	13 ,,	,,
7	F	11	Multiple warts under rt. heel	4	11 ,,	,,
8	F	11	Between 1st and 2nd toes rt. foot; on sole under lt. metatarsal heads	7	17 ,,	,,
9	M	9	Sole of lt. foot ..	4	13 ,,	,,

My impression is that the longer the elastoplast can be kept dry and left undisturbed the more rapid is the cure. This is confirmed in one or two of the cases in which holidays have intervened and patients have waited an extra week before coming for treatment. Every treatment is carried out at the clinic, and the patients are instructed not on any account to disturb the plaster. Each case is seen 2 to 3 weeks after the treatment is completed to make sure that there is no recurrence.

The treatment is carried out for me by my physiotherapist, Mrs. Fletcher, to whom I am indebted for her care both in the details of the treatment and in the keeping of records.

W. HIRST BATEMAN, M.B., Ch.B.

At the annual general meeting of the National Birthday Trust Fund the chairman, Sir Julien Cahn, reported that the Trust continued to maintain the headquarters at 57, Lower Belgrave Street, providing accommodation for the Queen's Institute of District Nursing and the College of Midwives. The Analgesics Appeal Fund had supplied 50 machines for administration of gas-and-air analgesia free of charge to hospitals and district nursing associations, etc., and 46 at a nominal charge of £5, 36 of them to district nursing associations. The Fund had also supplied 48 machines to emergency maternity hospitals, under a scheme approved by the Ministry of Health, at purely nominal cost to the local authorities concerned. Sir Julien also referred to the report upon the nutrition work of the National Birthday Trust Fund and Joint Committee of Midwives which Dr. Margaret Balfour would shortly complete, and to the Human Milk Bureau at Queen Charlotte's Hospital, a further activity of the Fund.

Reviews

GENETICS AND RACE BIOLOGY

Race, Reason and Rubbish. An Examination of the Biological Credentials of the Nazi Creed. By Gunnar Dahlberg, M.D., LL.D. Translated from the Swedish by Lancelot Hogben, F.R.S. (Pp. 240. 8s. 6d.) London: George Allen and Unwin.

The writings of Prof. Dahlberg are nothing if not robust. To anyone who likes his popular science served up without subtlety in the manner of the traditional sergeant-major this book should make a strong appeal. If, however, the fastidious avoid it altogether because of its ridiculous title, or abandon it after glancing at its earlier pages with their unattractive illustrations, they will be depriving themselves of one of the best and clearest of recent popularizations of genetics and race biology. The account of the principles of heredity is thoroughly plain and forceful, but the most skilful feat of exposition is the explanation in very simple language of the genetics of populations. This is, of course, the field in which Prof. Dahlberg has himself done so much important work. Much emphasis is naturally attached to his own conception of "isolates," which some prefer to treat under the more general headings of inbreeding and assortative mating. The fact that a few generations ago the choice of a mate by a human being was usually effectively limited to a relatively small group of persons, and the further fact that the average size of these isolates has greatly increased in recent times, have very significant consequences. To give a single example, Prof. Dahlberg advances an interesting speculation as to the increase in stature which has occurred in Western Europe in recent times. Thus, in Sweden the average height of recruits for military service has increased by 9 cm. during the course of a century. It is usual to ascribe this to improved standards of living, but, he points out, it is difficult to accept so simple a view, because the increase has been uniform whereas the improvement in standards of life was much more marked during the second half of the period; moreover, the famine years of the 'sixties were without effect on the figures. The increase might possibly be due, however, to continuous increase in the average size of isolates, provided that genes increasing stature tended more often to be dominant than recessive.

The subject of race is dealt with as trenchantly as the rest, and if few in this country are to-day in need of conversion, many will be glad to read such a lucid exposure of the myths which have had so harmful an effect in Germany. Occasionally, however, the arguments of the author appear tendentious. His contention that the effects of large-scale sterilization would be negligible is based on the assumption of the recessive transmission of undesirable characters; he does not consider the much more probable case of multifactorial inheritance with or without partial dominance. He minimizes the effects of differential fertility by concentrating all his arguments upon social classes and ignoring the undoubtedly large association between intelligence and infertility quite apart from questions of social class. Nevertheless, in spite of the imperfections which it displays so honestly upon its face, this able book deserves recommendation.

WOUND TREATMENT IN THE LAST WAR

Pathology and Treatment of War Wounds. Researches from the Inoculation Department, St. Mary's Hospital. By Sir Almroth E. Wright, M.D., F.R.S. (Pp. 208. 21s.) London: William Heinemann, Medical Books, Ltd.

This volume is a reprint in book form of ten papers published by Sir Almroth Wright during or shortly after the war of 1914-18. Two of these deal with gas gangrene, one with the acidosis of shock, and one with the phenomenon of "intertraction"; the remainder expound general principles of wound treatment with a view to combating sepsis, and describe the many ingenious forms of experiment on which the author's doctrines are based. A proposition fundamental to all this work is made on p. 8: here it is said of Metchnikoff's experiments on phagocytosis that because they were made *in vivo* they were made "under conditions which cannot be sufficiently simplified to give quite unambiguous answers. And we require for the elucidation of our problems, and for all detail work connected therewith, absolutely simple crucial experiments, such as can only be made *in vitro*." Whether these experiments, using perhaps a capillary tube and a drop of blood or serum and some bacteria, do in fact wholly reveal the processes at work in a wound in the living body may be questioned: the conditions may be simplified, but they are also in many ways different. That observations made in this way can altogether take the place of experiment in the living animal, or that their results are more significant, will not be generally accepted.

Much has happened since these papers were written, and of the principles they advocate some are still accepted and others have been superseded. The value of early excision and the futility of crude antiseptic applications need no emphasis nowadays, but antiseptics have come into their own again with local sulphonamide chemotherapy, and users of the Bunyan bag would not now accept even the strictures on hypochlorite treatment which it receives here. Hypertonic saline may perhaps have suffered undue neglect, as may the use of vaccines in persistent wound infection. We are grateful for this volume not so much for the lessons to be learned from it a quarter of a century after most of it was written as for the complete picture it gives of a historic controversy. As an exposition of a system of experiment and belief it would have been better rewritten, since as it stands there is naturally much repetition, and even illustrations recur, but we should then perhaps lose some of the vigorous and picturesque language of which the author is a master. As an exercise in polemics the last chapter is unrivalled: to tear one's opponent into little shreds with such magnificent freedom of expression must be highly satisfying, and is perhaps worthy of emulation in these too-polite times.

A STUDY OF THE BLOOD IN CANCER

A Study of the Blood in Cancer, with Special Reference to the Needs of the Tumour Clinic. By O. Cameron Gruner, M.D. (Pp. 100. 15s.) Montreal: Renouf Publishing Company; London: H. K. Lewis.

This book is a plea for the value to be obtained from detailed examination of the blood in the diagnosis of cancer. It is well produced, at a reasonable price, by subsidy from the Archibald Cancer Research Fund of McGill University, Montreal. Methods comprise studies of wet preparations, vitally stained preparations and ordinary blood smears, as well as certain special techniques. Observations are made in very great detail of all the cellular and plasmatic elements in the blood, using ordinary illumination, dark ground, polarized light, and ultraviolet light. The code for mononuclear cells of the blood alone contains 80 different possibilities. The possible data are so numerous that they can only be expressed as pictorial diagrams, patterns, or trends. There are unsuspected pitfalls, too, as in the demonstration that a meal which features pork will produce a blood picture indistinguishable from that of cancer, though of course normality reappears after eight or nine hours.

The author does not claim absolute certainty of diagnosis by these methods, but he does indicate a very high degree of probability. It would seem as though the degree of alteration of the blood picture is proportional to the degree of advancement of the disease. These results may interest people who are interested in the natural history of the blood or in the curious bypaths of cancer research. We doubt whether they have any value for the early diagnosis or treatment of cancer. It is evident that the author has a high "credulity index." The most remarkable expression of this is his opinion that in radi-aesthesia, a procedure akin to water-divining, we have "an absolute test (100% both ways) for the existence of malignant disease in the body." This suggests that radi-aesthesia can even make the distinction between cancer and pork. It is remarkable that claims to diagnose cancer infallibly should be made without any corroboration by experimental observations or statistical data.

BROMPTON REPORTS

Brompton Hospital Reports. A Collection of Papers recently published from the Hospital. Volume X, 1941. (Pp. 127. 5s. 7d., post free.) Copies obtainable from the Secretary of the Hospital, London, S.W.3.

A further collection of papers from the Brompton Hospital recently published in medical journals forms the tenth volume of the *Reports*. In fact one paper, on the persistence of lipiodol in the lungs after bronchography, has not previously appeared. F. H. Young and E. Gantz indicate the practical importance

of the problems involved, and review past experimental work on this subject. Their own contribution is based, in the first instance, on pathological examination of lungs or lobes removed at operation from patients in whom bronchography had been carried out at some time or other before the operation. The duration of the retention of the oil appeared to depend on two factors: on the cellular activity of the phagocytes and on the speed with which fibrous tissue is developing. Experiments were carried out to determine whether decomposition of the oil took place under physical conditions that develop when the iodized oil is retained in the lungs—that is, exposed to air and moisture. No free iodine was detected, but some dissociation of the oil did occur, as was shown by the rise in acid value. Further experiments showed that, while the oil was not an adequate medium for bacterial culture, the addition of broth to it did provide a medium in which the bacterial growth was not inhibited by the oil. Thus infected material, if present, was probably conveyed by the oil to the terminal bronchi and alveoli. These investigations are being continued, and further results should be awaited with interest.

The papers previously published include three of particular interest in wartime: on drainage of the pleura, by R. C. Brock; on closed wounds of the chest, by J. G. Scadding; and on traumatic haemothorax, by C. Hoyle. There are also reprinted A. F. Foster-Carter's valuable paper on bronchial adenoma from the *Quarterly Journal of Medicine*, and some notes on the treatment of carcinoma of the bronchus with radon seeds by F. C. Ormerod.

Notes on Books

Part I of the *Fourth Supplement to the British Pharmaceutical Codex, 1934*, has been published by the Council of the Pharmaceutical Society by the Pharmaceutical Press, 17 Bloomsbury Square, W.C.1, at 4s. 6d. It contains amendments to the monographs in Parts I and II, amendments to some formulae in Part III, and amendments to appendices in Part IV.

Mr. NILS L. ECKHOFF has completely revised the text of *Aids to Osteology* for its fourth edition and has introduced forty-two diagrammatic line drawings of bones to help the student in revision. As in the third edition, the nomenclature recommended by the Anatomical Society of Great Britain and Ireland is used throughout. This little book is one of Baillière, Tindall and Cox's Students' Aids Series and the price is 6s.

Dr. GORDON SEARS has revised his *Vade Mecum of Medical Treatment* for a third edition (Edward Arnold and Co., 10s. 6d.), and it continues to give in a convenient form an outline of the treatment of the diseases most commonly met in general medical practice. References to chemotherapy have been brought up to date, the term "sulphonamide" being used for the whole group of drugs. Practical notes on the three main types—sulphanilamide, sulphapyridine, and sulphathiazole—are included in an appendix.

Preparations and Appliances

A LIGHT TRAILER AMBULANCE

Lieut.-Colonel J. L. MOIR, M.B., Medical Officer, No. I Zone, Anglesey Home Guard, writes:

At my request Mr. Duerr of Bodorgan, a well-known inventor, undertook the designing of a light trailer ambulance, especially suitable for the use of the Home Guard in country districts. The chief features I asked him to incorporate were as follows: easily man-handled and towable by any light car; cheap and easy to produce in quantity; designed to exclude so far as possible the exhaust gases of the towing car; easily loaded and handled by two persons; some method of heating provided, and if possible provision for an attendant to travel in contact with the stretcher occupants. Mr. Duerr made a complete model to scale, and the following brief specification shows how well these ideals have been attained.

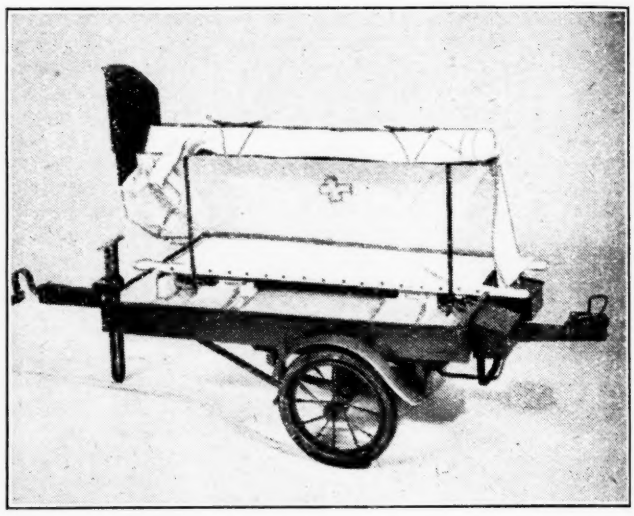
Ventilation and Heating.—Fresh air is drawn in at the highest point through a chute or cowl. It is conducted along the ridge of the ambulance and distributed through a series of holes to the interior to avoid strong draughts, thus creating a slight internal pressure which leaks out at the various small openings around the stretcher tray and prevents the admittance of exhaust fumes. Provision is made in the tray for four hot-water cans, two under each stretcher, holding about a gallon each.

Loading.—It is safe to say that two girls of ordinary physique can easily lift a loaded stretcher and place it into position without strain, because the top of the tray is only 30 inches off the ground and there is no sliding in from the rear to be done; all that is necessary is to lift the stretcher, step sideways, and lower into slots.

Brakes and Springing.—Owing to the extreme lightness of the ambulance, only parking brakes are necessary; these automatically come into operation when the leg of the towing beam is lowered and, acting directly on the tyres, they are most efficient. Very light and supple leaf springs are provided for the comfort of the occupants and are made fairly flat.

Wheels, Tyres, and Cover.—Motor-cycle type wire wheels with $26'' \times 2\frac{1}{2}''$ tyres are suggested. Any suitable canvas anti-gas or other cover may be used, fastened down by press studs and held up by cords and cleats.

Towing Attachment.—The object in providing the simple attachment shown on the model is to enable any local blacksmith to fit the swan-neck fitting to any car, either to the car frame or bumper bar. (One of the many more elaborate ball joints could be used instead.)



Attendant's Seat.—When it is desirable that the attendant should be in contact with the stretcher cases, a pillion seat is provided with foot rests under the tray. Contact is made by means of the "lightning fastener" down the centre of the canvas cover immediately in front of the attendant, the occupant's head being next to him. A bell communicating with the driver is available to the attendant and to the patients. An interior light run off a dry battery is to be fitted under the ridge board. Two sloping-lid first-aid boxes are fitted into the rear end of the ambulance within easy reach of the attendant. (A motor-cycle spring pillion seat, three or four inches deep and fitted with a back rest, could be used in place of the plain seat shown on the model. Two small windows might with advantage be fitted into the rear end of the canvas cover, to keep the occupants under continual observation.)

The photograph (by Jones-Owen of Bangor) shows the canvas cover lifted from one side with one stretcher in place; the other has been removed to show the two hot-water cans under each stretcher.

The main features of this "Duerr-Moir" ambulance are: (1) its extreme lightness and simplicity; (2) it can be used either as a trailer ambulance attached to any light car or as a hand ambulance detached from a car, to be used over fields and rough ground; (3) the simplicity of the heating and ventilating systems; (4) it is cheap to produce in large quantities; (5) the cost of upkeep is practically *nil*.

Comment or criticism is invited and the opinion of medical men practising in country districts would be especially welcomed.

That the use of metrazol in the treatment of psychoses may be the origin of spontaneous epileptic seizures in a patient not previously subject to them is the conclusion of E. Liebert (*J. Amer. med. Ass.*, 1942, **118**, 119). In 8 of his patients epileptic convulsions developed 3 to 24 months after the cessation of metrazol treatment. As these patients had been observed in hospital for many years, it was not difficult to establish the fact that this was a new phenomenon, and as, in addition, epilepsy is rare in cases of schizophrenia, Liebert believes that in his cases the seizures were the result of the treatment to which the patients had been subjected.

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SPHINCTER MECHANISM OF THE BILE DUCT

In the second part of his Hunterian Lecture published in our present issue Rear-Admiral Gordon-Taylor discusses the important question of the sphincter mechanism of the bile duct and raises many problems of great interest. Oddi's original investigations were carried out in 1887 and were based upon both anatomical and microscopical work, mainly in animals. Since that time the sphincter to which his name is given has been the object of varied and elaborate study and experimentation. Anatomists have demonstrated beyond question that a definite intrinsic sphincter exists at the terminal portion of the common bile duct, and Gordon-Taylor's review concludes that the muscle sheath of the duct is derived from the circular muscle coat of the duodenum. It will be remembered that the common bile duct runs obliquely for a distance of one or two centimetres through the duodenal wall in company with the pancreatic duct (of Wirsung), the two uniting at the ampulla of Vater into a common papilla projecting into the duodenum. In this passage through the duodenal wall the ducts are subject to extrinsic muscle influences, and constriction of the common duct may be brought about by this intestinal muscle—from which the intrinsic muscle of the sphincter is itself derived. Gordon-Taylor points out that the direction and arrangement of the fibres around and in the duct wall also enable them to act by retracting the papilla and partly by drawing together the duodenal villous processes, thereby preventing the outlet of bile into the intestine. Embryological and comparative anatomical researches also tend to confirm this conclusion—namely, that the sphincter mechanism of the ampulla is derived from the muscular coats of the duodenum and not from any distinct circular muscle of the duct itself. Whatever the exact origin, however, of this sphincter muscle, there can be little doubt as to its importance and its special functions in biliary control. The exact extent of nervous and hormonal control is uncertain, but that some reciprocal mechanism exists whereby gall-bladder contraction is related to sphincter relaxation is undoubted. If the sphincter mechanism is destroyed or put out of action the gall-bladder does not fill and bile flows directly into the intestine, so that one important function would appear to be that of aiding gall-bladder filling as well as regulating the flow of bile into the intestine. As Gordon-Taylor remarks, the ascending hepatic infections which may so often follow surgical interference with the normal bile-duct structure indicate another of its important functions—namely, the prevention of regurgitation of duodenal contents into the common bile duct.

Although experimental work involving incision and intubation of the bile duct is open to criticism, many reports of such investigations are available, and Bergh, reviewing this subject recently, confirms certain main points upon which agreement is fairly general. A fatty meal, for example, causes relaxation of the sphincter, while magnesium sulphate does the same with less regularity but with definite gall-bladder contraction. Morphine causes contraction of the sphincter—under the conditions of the investigations—while the presence of a stone causes irritability and tendency to spasm which may persist many weeks after its removal from the common bile duct. Such irritability and spasm may also be of significance in conditions other than biliary calculus. Ivy and others demonstrated in 1933 that painful sensations identical with biliary colic might be caused by spastic contraction of the sphincter of Oddi in man; and Westphal, Gleichmann, and Mann in their important book in 1931 described in detail various forms of dyskinesia of the gall-bladder. As long ago, however, as 1761 Morgagni had suspected that spasm of the bile duct might produce clinical disorders, and Oddi himself supported this proposition. We are still, however, uncertain of the true frequency of such "functional" gall-bladder conditions or of the exact details of the nervous control of the biliary apparatus. Mirizzi has attempted to investigate this subject by the slow injection, at operation, of 3 to 5 c.cm. of iodized poppy-seed oil into the cystic duct of man, followed by immediate radiography. He concludes, after some 800 examinations by this method, that increased sphincter spasm associated with and caused by a calculus leads to anatomical changes of biliary stagnation and muscular hypertrophy at the sphincter of Oddi. Cases of purely functional dystonia of the sphincter may also, in his opinion, show dilatation of the biliary tree, and in these cases reflux of lipiodol into the duct of Wirsung is a characteristic radiographic finding; this he suggests is due to an active (abnormal) biliary current and is not a purely passive phenomenon, and it is thus a condition of possibly high significance in the causation of pancreatitis.

How far variations in activity of the sphincter of Oddi in fact occur in health and disease it is difficult to say. Fatty meals may cause relaxation, but fresh olive oil may have no such effect, and similarly a carbohydrate meal exerts little influence (Bergh). To what extent its action is reflexly affected by the stomach, colon, or other distant organs is also uncertain. It seems clear, however, if only from the careful study of structure reported by Gordon-Taylor, that the regulation of biliary flow into the intestine—and hence of much of the digestive activities—must depend upon a delicately controlled intrinsic bile duct sphincter; it is thus not simply governed by the movements of the duodenal wall which allow bile to flow according to whether they are relaxed or contracting.

POST-WAR EPIDEMIC PROBLEMS

Dr. Melville D. Mackenzie, in common with many who were brought into close contact with the great human tragedy arising from the uncontrolled prevalence of epidemic disease, destitution, and famine in the years following the last war, has evidently given much thought to the medical and public health problems that are likely to call for urgent solution in Europe when fighting ceases. The results of his cogitations are published by the Royal Institute of International Affairs in a pamphlet entitled *Medical Relief in Europe: Questions for Immediate Study*.[1] He writes of some of the grim happenings in those post-war years as seen by himself, evidently in Russia; of some of the difficulties encountered by philanthropic organizations and Governmental agencies in providing adequate relief; of the lack of co-ordination of the many agencies engaged in the stupendous task of trying to control the spread of disease in the conditions then prevailing and of the loss of efficiency occasioned thereby; and of typhus fever, malaria, and malnutrition. He describes the remarkable development of international health work during the twenty years between the two world wars and makes suggestions regarding the resumption of that work after this one. The machinery for post-war medical relief is outlined.

[1] Chatham House, 10, St. James's Square, London, S.W.1. (2s.)

Some of Dr. Mackenzie's statements and contentions may not command universal approval, but all will agree as to the necessity for setting up co-ordinating medical machinery before the war ends, so that no time may be lost in dealing with the most urgent problems that will arise. Dr. Mackenzie reminds us that during the three years following the last war more people died from famine and preventable disease than were killed in the war. It should not be forgotten that a still greater mortality was caused by the pandemic of so-called influenza that was ravaging the world when the Armistice was signed. That murderous pandemic flared up almost simultaneously in most parts of the world. Countries very remote from the scenes of actual fighting suffered most. Individuals in the prime of life paid a heavier toll than infants and the aged. Public health effort to control its spread proved lamentably inefficient. Reference is made to those happenings because they explain in part the fact that valuable time was lost in mobilizing international aid for the newly created States of Eastern Europe in their fight with devastating epidemics, chiefly typhus fever, the legacy of the war. It was influenza that occupied the attention of most public health administrations of the world during the winter of 1918-19 almost to the exclusion of all else: it was influenza that was the subject of the first post-war international medical conference, in Paris in March, 1919. Small wonder: no such epidemic had occurred within the memory of living man, and we were all sadly conscious of the limitations of preventive medicine in the face of such a catastrophe.

Dr. Mackenzie makes no reference to the work of the Typhus Commission, subsequently called the Epidemic Commission, of the League of Nations. That Commission was set up with the express purpose of co-ordinating international work in the post-war epidemic campaign, about which he has much to say. The Commission's contribution to the fight was by no means insignificant: it may claim to have done all that was humanly possible within the limits of the not inconsiderable sums that were placed at its disposal. The difficulties it encountered and the experience it gained might perhaps be turned to good account in making plans to cope with similar situations that are likely to arise when present hostilities cease. It is true that the Epidemic Commission, created in 1920 (there was then no Health Organization of the League of Nations), did not start field work till 1921. This delay was in one sense fortunate: the renewal of hostilities between Soviet Russia and Poland would have destroyed much of the first work it was planned to do had an earlier start been made.

Fortunately, in public health, as in other fields of human endeavour, events rarely justify one's worst forebodings. Forecasts of epidemic happenings are frequently wide of the mark. It would be foolish, however, to shut one's eyes to the probability of catastrophic happenings in the field of public health when hostilities cease. Dr. Mackenzie is concerned only with likely happenings in Europe. The possibilities in other parts of the world are perhaps even more disquieting. In the Far East plague, cholera, and small-pox, to name but three dread scourges, may well give rise to very serious trouble when normal commercial relationships are re-established. Malaria in many countries has only been kept under control by unceasing vigilance and effort; the relaxation of that control may have incalculable consequences. There can be no doubt about the need to set up co-ordinating international medical machinery before the war ends: the combined medical resources of the world may well be taxed. The growth of international medical work in the inter-war period simplifies considerably the approach to the problems confronting us. The Epidemiological Intelligence Service of the League of Nations continues to function in Geneva. Its *Weekly Epidemiological Record* still appears regularly: the amount of information this contains in present conditions is no small achievement. The machinery, experience, and contacts of the Health Organization of the League of Nations should prove of very great value in facing post-war epidemic problems.

INTESTINAL ANTISEPSIS

Sulphaguanidine, although introduced for the main purpose of treating bacillary dysentery, has also been used to reduce the bacterial population of the lower bowel as a safeguard before operations on the colon. Another drug has now been introduced for this purpose, and remarkable claims are made for it by E. J. Poth and F. L. Knotts.[1] Succinylsulphathiazole behaves like sulphaguanidine in being poorly absorbed from the alimentary tract; indeed only 5% of the amount administered appears in the urine. It is hence not surprising that full doses can be given without any untoward general effects. A high concentration of the drug thus persists in the intestinal contents, and is believed to exert its bacteriostatic action not directly—since succinylsulphathiazole has almost no *in vitro* action on bacteria—but by liberating sulphathiazole. That hydrolysis of the drug does occur in faeces can be shown by maintaining voided specimens at body temperature; in these the concentration of free sulphathiazole steadily rises. Whatever their exact mechanism, the effects reported are astonishing. In a patient "prepared" with succinylsulphathiazole the bowel at operation is found to be collapsed, the evolution of gas having ceased. It is possible in the dog so treated to cut through one-third of the circumference of the descending colon and, leaving it unsutured, to close the abdomen, without causing fatal peritonitis. The stools are "relatively odourless" and the numbers of living *Bact. coli* per gramme of moist faeces usually fall from 10,000,000 to less than 1,000. No other micro-organism was studied quantitatively; that anaerobes must be affected is deduced merely from the change in character of the intestinal contents, and *Strep. faecalis, Bact. aerogenes,* and *Proteus* are said to be resistant to the drug. It is also mentioned that dysentery bacilli are susceptible and typhoid and paratyphoid bacilli resistant. The effect on various elements in the normal flora of the lower bowel is clearly a matter calling for further study, and such a study is said to be in progress. Although it is not really known which of the numerous species found in the bowel can play an active part in producing peritonitis, it is incredible that the escape of intestinal contents should be rendered harmless merely by reducing its *Bact. coli* content. The bacteriostatic effect as indicated by this reduction was regularly achieved except in a few cases having either diarrhoea or obstinate constipation; either of these conditions, the former particularly, prevents the proper action of the drug. These authors have now treated with it 100 patients suffering from various specified bowel conditions; they record its effects only in 27 cases requiring operation on the lower bowel, in which its administration was designed to prevent post-operative peritonitis. Of these, 10 are described in detail and 4 are illustrated by diagrams of the complex resections and anastomoses which were necessary. Operations inevitably soiling the peritoneum were performed with apparent impunity, and freedom from post-operative distension was a further advantage secured. This form of medication will evidently

[1] *Arch. Surg.*, 1942, **44**, 208.

become a necessary adjunct to colonic surgery, and succinylsulphathiazole appears from this account to be the drug of choice, but a close comparison of its effects with those to be obtained with sulphaguanidine, preferably by quantitative bacteriological methods, would establish its position more clearly.

PROGNOSIS OF ACUTE HAEMORRHAGIC NEPHRITIS IN CHILDHOOD

Varying opinions on the ultimate outlook for children who have suffered from acute haemorrhagic nephritis have been expressed in the past twenty years. These discrepancies appear to depend essentially on the standards offered by the investigators, and the introduction of the "Addis count" some years ago was an attempt to reach agreement on what could be regarded as normal. This test turns upon examination of the deposit obtained after high-speed centrifugalization of the urine, and various workers have set out the upper limits for the calculated numbers of casts, white epithelial cells, and red blood cells after a drop of the deposit has been examined in a blood-counting chamber. G. E. Pittinos, J. D. Craig, and A. G. Desanctis[1] report the use of this Addis count among other methods in the examination of 32 patients who had all suffered from acute haemorrhagic nephritis at an average time of about six years before the investigation, only 4 of the patients having had the acute illness less than two years before being examined. The group of 19 boys and 13 girls were subjected to the following procedure: physical examination; blood-pressure determination; analysis of the urine with an Addis count; complete blood count; chemical blood examination for urea, non-protein nitrogen, creatinine, cholesterol, serum albumin, and serum globulin; and a urea clearance test. All the children were found to be essentially normal physically, except one who had a raised blood pressure with no other abnormalities. Routine examination of the urine showed 6 children with albuminuria. Two of these were found to have high white cell counts by the Addis method, which were ascribed to pyuria rather than to nephritis, one showing an abnormal renal pelvis with an intravenous pyelogram. Two others with albuminuria were examined eight and ten months later and found to be normal. One patient had no abnormality apart from the albuminuria, and had two normal Addis counts eight months apart. The authors do not think that this patient should be classified as having residual kidney damage of what is termed "latent nephritis" type. The remaining patient with albuminuria did not return for further study and was therefore classified as having potential latent nephritis. Chemical examinations of the blood for retention of nitrogenous products were all negative. Urea clearance tests on all patients were normal, and there was no anaemia ascribable to the nephritis. Addis counts done on all the children were normal except for the two who were considered to have pyuria. These results would indicate that acute haemorrhagic nephritis in children has an excellent prognosis, for the Addis count introduces strict criteria of cure. The 32 patients who formed the subjects of this investigation were, however, drawn from 110 patients suffering from acute haemorrhagic nephritis in the Post-Graduate Hospital, New York, in the years 1928–39. Four patients died during the initial manifestations of their disease, and the attempt to establish contact with the remaining patients produced only the 32 who served for this follow-up study. The value of the report lies, therefore, not so much in any statistical deductions as to the ultimate prognosis in this disease as in the emphasis laid upon the need for standardizing the criteria of a healed kidney. It is suggested that every child who has suffered from acute haemorrhagic nephritis should be examined every three months up to and including two years after the acute attack. This examination should include physical overhaul, blood-pressure reading, and examination of the urine, and an Addis count at the end of two years. If in the course of the two-year period the slightest urinary abnormality is found the Addis count should be employed as a further check.

[1] *J. Amer. med. Ass.*, 1941, **117**, 1855.

SIMMONDS'S DISEASE

Wasting and loss of strength are such important symptoms that the study of their rarer organic causes is of special interest. In this connexion Simmonds's disease is of particular significance because it brings into prominence the endocrine factors in cachexia and offers some key to the complex interaction of the ductless glands. First described by Simmonds in 1914, panhypopituitarism, or Simmonds's cachexia, has since received its fair share of attention in medical literature. It occurs most often in women between 30 and 40 years of age and in those who have borne several children. In some cases the condition follows infection or trauma, and in others it arises after severe post-partum haemorrhage. The disease usually begins with amenorrhoea, and wasting appears later, in some cases being very slight. Although loss of strength and alertness are the main symptoms, the hypogonadism and general lowering of metabolism, with loss of hair and retardation of growth, are characteristic. Most cases are fatal, but the course is slow, and the gradual wasting may in time lead to extreme emaciation. The cause of this disease is some destructive lesion of the anterior pituitary.

Non-fatal and minor degrees of the condition are difficult, if not impossible, to distinguish with certainty from other causes of wasting and weakness. Of these the one which has perhaps given rise to most difficulty is anorexia nervosa. Here the wasting is often extreme, though the weakness is much less in evidence. Indeed the typical patient with anorexia nervosa, usually a girl of from 15 to 25 years of age, may appear full of energy and be constantly on the go, while losing weight to an alarming extent as the weeks pass. In anorexia nervosa the periods also cease, blood pressure and basal metabolism fall, and the hair may be lost. In pituitary cachexia the patient wants to eat but cannot, whilst in anorexia nervosa the sufferer —often emotional or actually psychopathic—usually "wants" to lose weight and will not eat; in both conditions there is often found an undue sensitivity to insulin with a relatively low blood-sugar content. In a recent paper R. Fraser and P. Smith[1] have investigated the insulin sensitivity by means of an insulin-tolerance test, as well as the urinary excretion of steroids derived from the adrenal cortex and testis, in a number of cases of Simmonds's disease and similar clinical conditions. Though of necessity post-mortem confirmation of the diagnosis was not possible and the number of cases was small, the results suggest that by these tests a distinction between the various conditions may be made biochemically. Briefly put, the insulin-tolerance tests showed that the initial fall in blood sugar after insulin injection was followed, in cases of Simmonds's disease, by a longer delay in return to the previous fasting level than in normal individuals. In 3 out of 8 cases of anorexia, however, a similar delay, or "hypoglycaemic unresponsiveness," was also found, so

[1] *Quart. J. Med.*, 1941, **10**, 297.

this response is not confined to panhypopituitarism. The authors found that in all their cases of Simmonds's disease except one the urinary 17-ketosteroid assays were negative, while in the 4 cases of anorexia tested the assays varied from 2.7 to 14.7 mg. per 24 hours. Such investigations as these offer hope that further knowledge may be derived from the subtle reactions of the pituitary upon growth, the sex glands, and the adrenals; they also suggest methods of diagnostic value to the clinician.

BLOOD FLOW TO LIMB MUSCLES

Studying by means of a segment plethysmograph the flow of blood to the muscles of the forearm and calf, Wilkins and Eichna[1] observed that warming the body led to an increased, and cooling to a decreased, flow. Stimuli known to cause vasoconstriction in the hands and feet had to be more intense to produce measurable changes in the forearm and calf. Immersion of the hand or foot in iced water was the most effective of such stimuli. On the other hand, certain emotional stimuli—such as mental arithmetic—which are known to cause vasoconstriction in the hands and feet resulted in an increased flow of blood to the forearm and calf. This reaction was of two types—early and delayed. All the reactions mentioned, except the delayed vasodilator response to certain emotional stimulation, depended upon an intact sympathetic nervous supply. There is evidence of a humoral mechanism, possibly adrenaline, in this reaction. Vasodilatation in the forearm and calf, due to exercise or after temporary arterial occlusion (reactive hyperaemia), was unaffected by sympathectomy. It was also shown that vasodilatation after arterial occlusion for five minutes was relatively complete, being unaffected by sympathectomy, warming the body, and by other stimuli known to cause vasodilatation As this method is technically easy and its effect relatively complete, the authors recommend it for inducing experimental vasodilatation in the forearm and calf. The only thing which materially affected the degree of vasodilatation was a strong vasoconstrictor stimulus; weak vasoconstrictor stimuli had no effect. The flow of blood during reactive hyperaemia varied directly with the blood pressure, both in normal subjects and in hypertensives. Further, if the blood pressure of normal subjects was raised to levels comparable to that of the hypertensives, the flow of blood was of the same order in both groups. Conversely, when the blood pressure of hypertensives was lowered to normal levels the blood flow was like that in normal subjects. The authors think this is evidence against the view that in hypertensive subjects the vessels in the limbs are in a state of increased peripheral resistance which cannot be affected by physiological vasodilatation. Five patients with hyperthyroidism were also investigated. All showed an increased blood flow to forearm and calf, both under basal conditions and with reactive hyperaemia. There was little correlation between the volume flow and the basal metabolic rate.

While there is little exactly new in these observations, and although the method of measuring the blood flow to the muscles of the forearm and calf is not ideal, the work nevertheless represents a step in the right direction, and has an important bearing on the interpretation of the clinical tests usually employed in cases of peripheral vascular disease. Surgeons have long mistrusted predictions, based on skin-temperature reactions, that sympathectomy would be without benefit in certain cases of intermittent claudication. There has always been a need for measurement of blood flow to the muscles rather than to the skin, and this should heighten the value of preliminary testing.

[1] *Johns Hopk. Hosp. Bull.*, 1941, **68**, 425, 450, 477, 512.

CONFIDENTIAL DEATH CERTIFICATION

Civil registration has been carried out in the Province of Quebec since 1622. When the Province joined the Canadian registration area in vital statistics in 1925, no change was made in the civil registration system, and the collection of vital statistics was entrusted to the clergy. The old system, which was not designed for vital statistics, had defects when judged by modern requirements. The procedure regarding death registration was somewhat cumbersome. The undertaker was responsible for obtaining the death certificate, and he retained it until the interment, when he delivered it to the priest or minister, who made his returns at the end of the month. By this procedure the certificate was seen by a number of persons, and in a small community the disease from which a person died soon became known to all. This practice embarrassed the doctor who wanted to maintain his professional secret and yet desired to provide accurate information to the Ministry of Health as to the cause of death. In 1931 a number of physicians who had visited Europe suggested that the procedure should be modified by adopting the European system of a confidential medical certificate. The term "European system" is hardly accurate, because confidential death certification was not common in Europe, although it was established in Switzerland. The need for some modification in registration was emphasized in 1936-7, when an investigation was carried out on death certification. The inquiry covered 5,965 deaths, and visits were made to the doctor issuing the death certificate, and he was asked his actual opinion regarding each case, without reference to the statement he made on the official certificate. This inquiry revealed that 1,163 certificates, one-fifth of the whole, had been intentionally falsified, 322 were partially inaccurate, and 841 were completely untrue. The concealment of four causes of death comprised almost 90% of the false certificates: they were cancer 23.9%, heart diseases 22.5%, infectious diseases 20.7%, and tuberculosis 11.8%.

The situation was remedied in 1940 by adopting a system of confidential medical certificates.[1] The new certificate has a flap which covers the medical certificate proper and is sealed. Anyone opening the flap is liable to prosecution. On the face of the flap, which is a permit for burial, it is noted whether death was due to violence or infectious disease, so that the Public Health Acts dealing with these causes can be complied with. No conclusions regarding the possible alterations in the trend of the death rates can be attempted after so short a trial, but there has been an increase in some causes of death which in the past were the ones most often concealed. Besides the satisfaction that the new certificate has given the medical profession, the statements provide more explicit details and are easier to interpret and tabulate. One disadvantage is that the mucilage on the flap tends to stick and has given rise to loss of certificates: the author states that "in our office we have lost a few thousands." In view of this defect it seems that the death rate from specific causes must still be inaccurate, although an improvement has been obtained in proportional mortality.

Doubtless the innovation has improved the vital statistics of Quebec, but to the perhaps conservative Briton the method has no advantage over ours, and it does not seem likely that such a scheme would improve our vital statistics. Our control of local registration is more efficient than in Quebec, which is "on the somewhat benevolent basis of co-operation." The knowledge of one's family medical history is surely not generally undesirable, and for most life insurance policies it is a necessity if a penalty is to be avoided.

[1] Parrot, Paul, *Canad. publ. Hlth. J.* 1942, **33** 114.

MAINLY ABOUT WOMEN*

BY

Sir ALFRED WEBB-JOHNSON, K.C.V.O., C.B.E., D.S.O., T.D.

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It is always a pleasure to me to visit the London School of Medicine for Women, for I have the greatest admiration for your achievements, and I have many personal links with members of your staff—past and present. Whenever I visit you I feel I am treading historical ground, for, though medical women are now such an essential part of our profession, that position has been attained only by the self-sacrificing efforts of your founders and the devoted determination of those who fought their way to general acceptance.

In the Apocrypha it is written: "Oh ye men, are not women strong?" Although this fact has been realized from such early times, and is borne in on us forcibly to-day, it is but yesterday that the rights of women have been recognized. Great women there have been throughout known history—great Queens—and some other words of the Apocrypha are applicable to them as well as to men: "Leaders of the people by their counsels, and by their knowledge of learning meet for the people, wise and eloquent in their instructions: all these were honoured in their generations, and were the glory of their times."

Seeds Sown in the 18th Century

I always think that the seeds of the general recognition of woman's true place in society were sown in the latter half of the eighteenth century, about the time that "gentlemen" were invented by George III and Beau Brummel made bathing fashionable. My mind naturally dwells much on this period, for it was the time of the foundation of scientific surgery. It was an age of intellectual giants—the time of Samuel Johnson; of Zoffany, Hogarth, Reynolds, and Gainsborough; of Burke, the elder and younger Pitt, and Gibbon; of Nelson and Cook; of Sheridan and David Garrick—it was the time of John and William Hunter and Edward Jenner. In this starry firmament a group of women of the period shone as a brilliant constellation.

Not unnaturally women found their earliest opportunities for distinction in the giving of pleasure, especially in the imitative and creative arts. There were great players like Mrs. Cibber, Peg Woffington, and Mrs. Siddons. Among the painters of the time a woman, Angelica Kauffmann, was one of the first of the Royal Academicians. But, to my mind, the brightest star was Fanny Burney. She vindicated the right of her sex to an equal share in the fair and noble province of letters. But though generally acclaimed, Fanny Burney still felt the disabilities of her sex. Her father's lack of interest was largely responsible for her selling the copyright of *Evelina* for £20. Her father's estimate of her worth was probably only typical of the general attitude towards women, and he thought he was doing her good service when he secured for her an appointment as lady-in-waiting to an exacting Queen, although it was clear that in that position she would have no time for writing. Johnson's estimate was probably coloured by a subconscious superiority complex, for he influenced her writing and ruined it. I am also drawn to Fanny Burney because she provides a slender link with surgery. Her patronymic was originally McBurney, a name familiar to you all; and she was a visitor at Hunter's house.

It was natural that women should find in the field of social reform their opportunity to take a larger part in the life of the community. The outstanding pioneer was Elizabeth Fry. Though she was the mother of eleven she found time to fight for and attain shelters for the homeless, and libraries for naval hospitals; and she was able to carry through her great work of prison reform and to bring about the foundation of charity organization societies. From Elizabeth Fry it was but a step to Florence Nightingale, and then to women's fight to enter the medical profession. The women's movement took full shape in the middle of the nineteenth century. Medical women and Florence Nightingale, as a great historian has said, did more than any others of their sex to bring about the new conception of the place of women in society, and to carry to a successful issue the movement for the general emancipation of women. Voices had been raised before. But it is not the one who first says a thing, but those who say it so long, so loudly, and so clearly that men are compelled to hear them—it is to them that the credit belongs.

In the fight for women's rights there have been mistakes, but, after all, as Milton said, error is but opinion in the making. Nothing great was ever achieved without enthusiasm, but too much attempted often leads to violent reaction. The history of the movement provides a striking example of the inevitable gradualness of change, and shows that besides a moving power there is also need for a steadying power. Improvement is then gradual and slow—but sure and lasting: "*Chi va piano va sano ed va lontano.*" No martyrdom has changed the known tendency of things. An era comes to an end. Time advances, facts accumulate, doubts arise, and conditions become ripe for a new epoch. The spirit of the age then makes straight the path of progress.

Times had changed now, for improvements in travel had made it possible for women to move more freely about the country. Before railways all but the wealthy had to "stay put." Boarding schools and visits to friends became commoner after railway travel was possible. The horizon was enlarged and possibilities of freedom and service were seen more clearly.

Two Pioneer Medical Women

The pioneers in women's fight to enter the medical profession in this country were Elizabeth Garrett and Sophia Jex-Blake. After a long struggle Elizabeth Garrett attained her personal ambition, and soon showed that a woman could be a reliable physician. I am glad to recall that, although my hospital does not admit women students, Elizabeth Garrett found some of her difficulties met by being allowed to attend classes at Middlesex. She used her feminine arts to get her way. And, why not? As a pretty girl once said to Max Beerbohm: "After all, women are a sex by themselves, so to speak." The assistance Elizabeth Garrett received at Middlesex was chequered and intermittent; but in spite of disappointments her debt to Middlesex and the medical staff was great, and, on the whole, she had happy memories of the hospital and always said that the training was invaluable to her. And so Elizabeth Garrett reached the *Medical Register*.

Sophia Jex-Blake was of a different type. She was determined to force the padlocked portals of the medical schools, and, when in the United States, was not prepared to graduate from a women's college. She failed to enter Harvard, however, in spite of the powerful support of Oliver Wendell Holmes and Brown-Séquard, and decided to seek medical education in her native land. She tried London and Cambridge without success, and then concentrated her attack on Edinburgh. Through strife, riot, and public protests she eventually attained her goal.

Elizabeth Garrett was an instance of an individual success, but Sophia Jex-Blake fought the battle not for herself alone but for all, and events moved rapidly. In 1874 your School was founded, largely owing to the efforts of Miss Jex-Blake. Two years later a new Medical Act allowed examining bodies to admit women, and in 1877 the Royal Free Hospital was secured for the clinical teaching of your students. London University opened its doors to women, and they lost no time in showing their worth: your brilliant alumna Mary Scharlieb passed her examinations in the first division, and was awarded gold medals and a scholarship. Women doctors had arrived. Throughout the struggle there was a good deal of mental confusion and many hard words. These, I hope, have been softened by the passage of time.

Women and the College of Surgeons

I come to you to-day, dressed in a little brief authority, representing a College which was slow to take advantage of the Medical Act of 1876; for it was not until 33 years later that our diplomas were granted to women. But, though the doors were slow to open, women have not been slow to enter, and

* Address at the London School of Medicine for Women, on the occasion of the presentation of prizes, July 24, 1942.

now one in eleven of our Members and one in eighty of our Fellows are women.

Women did not attain full rights in the College until the reign of George V, when the Charter of 1926 was applied for during the Presidency of my late friend and colleague Sir John Bland-Sutton. As the next Middlesex surgeon to be elected to this high office, it was my privilege to be the first President to welcome women Fellows and Members to the Buckston Browne Festival, the occasion being honoured by the attendance of our only lady Honorary Fellow, H.R.H. the Princess Royal.

The Charter of 1926 was a landmark in our history because it gave women Fellows the same privileges as men Fellows. They are now able to vote for the election of Members of Council; they may themselves be candidates for the Council, and they are eligible as Examiners, and for the offices of President and Vice-President.

Our College has good reason to be proud of its women Fellows and Members. Two of them have held Hunterian Professorships; one has been Arris and Gale Lecturer, and one has been awarded the John Hunter Medal and Triennial Prize. In addition, two women students have won the Hallett Prize in the Primary Fellowship, and three have won the Begley Studentship.

My personal links with women surgeons have been very happy ones. I was proud to call Dame Mary Scharlieb my friend. I am also proud to be Vice-President of the Marie Curie Hospital, to the excellent work of which I was glad to call attention in the Bradshaw Lecture on "Pride and Prejudice in the Treatment of Cancer." In the last war I took over the Château Mauriciens in Boulogne base from Louisa Garrett-Anderson and Flora Murray. Curiously enough, I turned it into a hospital for women, while they came home and founded a hospital for men—the hospital of splendid memory in Endell Street.

War seems to give women their greatest opportunities for proving their worth. Florence Nightingale found her opportunity in wartime. War again in 1914 brought a big opportunity, and maturity may be said to have been thrust upon you almost at the sword's point or the cannon's mouth. In this war you took an honoured place by acknowledged right.

The Future of Women in Medicine

And, now, what of the future? You are heirs to a great inheritance. Your place is assured though special lines of work may be reserved for you. In India, for example, there is still a special field of work for women. In the Simon Report we read: "The women's movement in India holds the key to progress, and the results it may achieve are incalculably great. It is not too much to say that India cannot reach the position to which she aspires in the world until her women play their due part as educated citizens."

In social medicine women can play a special part in working for what it is fashionable to call "positive health." In the Scriptures it is written: "They that are whole need not a physician, but they that are sick." Those who hold that view to-day are in a small minority, for members of the medical profession no longer regard themselves merely as agents in the recognition and treatment of diseases; they now want to know the cause of disease and how to prevent it. The sick and injured cannot be herded through "marshalling yards" as some organizers would have us believe. The family doctor will remain the backbone of medical practice. As Alexis Carrel emphasized: "Disease is a personal event. It consists of the individual himself. The patient is not limited by his outer covering. His surface is not his real frontier. A man may be more interested in his environment than in his own body. His position in the community, for example, may appear to be of more importance than life itself." Medicine is essentially a calling. It has been well said that a physician or surgeon may possess the science of Harvey or Hunter and the art of Sydenham and yet be lacking in those finer qualities of heart and head which count for so much in a profession so intimately linked with the humanities.

Many of you may be about to leave hospital. There you have seen the best that medical science has to give. I often recall what Sir Frederick Treves said to King Edward VII when his Sovereign thanked him for his life-saving attentions. Having in mind the splendid work of his great hospital—the London—he replied: "Sir, you have had as much care and skill in your illness as the humblest of your subjects."

I congratulate the prize-winners and venture on a few words of advice. Don't hurry out into full independent autonomous isolated work: knowledge and timber should not be much used until they are seasoned. Remember that your calling is an exacting one: to do your duty you must be well equipped; for, as Kipling said when speaking in the Royal College of Surgeons, "Is it any wonder that your calling should exact the utmost that man can give—full knowledge, exquisite judgment, and skill in the highest, to be put forth, not at any self-chosen moment, but daily at the need of others?" Remember also Francis Bacon's words: "I hold every man a debtor to his profession; for the which as men of course do seek to receive countenance and profit, so ought they of duty to endeavour themselves by way of amends to be a help and ornament thereunto." In spite of a busy life and hourly calls you must keep up to date and thus help to narrow the gap between experiment and practice—between the acquirement and application of new knowledge. In the war against disease, just as in military campaigns, a time lag may be fatal to success.

We are now all of one great army, concerned no longer with the place of women or the preserves of men, but with the practice of medicine and the war against disease. As members of a united profession we should bear in mind what Tennyson wrote in *The Princess*:

> "The woman's cause is man's: they rise or sink
> Together."

BEIT MEMORIAL FELLOWSHIPS

At a recent meeting of the Trustees of the Beit Memorial Fellowships for Medical Research Dr. A. N. Drury, F.R.S., was appointed to the Advisory Board in the place of Prof. A. J. Clark, F.R.S., whose untimely death in July, 1941, was so deeply regretted by all who had worked with him. The Trustees noted with pleasure the election this year of three past Fellows to the Fellowship of the Royal Society—namely, E. Hindle (Junior Fellow 1910–12 and Senior in Tropical Medicine 1927–33), F. M. Burnet (1926–7), and A. R. Todd (1935–6). Out of the 28 present Fellows there are now 14 seconded for whole-time war work.

The following elections were made, with permission for each Fellow to be seconded at any time for war duties:

Fourth Year Fellowship (£500 a year).—E. G. L. Bywaters, M.B., B.S.Lond. To continue his studies of crush injuries in relation to kidney function, at the British Postgraduate Medical School, London.

Junior Fellowships (£400 a year).—D. Herbert, M.A., Ph.D.Camb. To study the biochemistry of toxoids for active immunization against gas gangrene, at the Dun Biochemical Laboratory, Cambridge University. F. W. Landgrebe, D.Sc.Aberd. To study the separation of posterior pituitary hormones and their clinical uses, at the Medical School, Aberdeen University.

The Maternity and Child Welfare Group of the Society of Medical Officers of Health, in a memorandum on planning for the future health services for mothers and children, points out that factors outside medicine influence maternity and child health, and therefore the provision of adequate food, housing, and financial aid are essential features of any satisfactory plans. A complete maternity and child welfare service—with ancillary services—should be available to all as part of a national salaried medical service organized on a regional basis, with the Health Centre as the local unit. The prevention and treatment of illness in children should be in the hands of doctors who have had a special postgraduate experience, and the present maternity and child welfare and school medical services should be amalgamated, so that one service provides for the child from birth to school-leaving age. There should be enough institutional accommodation for all women who require or prefer confinement in maternity hospitals, which should be separate units of general hospitals. The obstetric care and confinement of the mother should be carried out by a specialist obstetric service based on the maternity hospitals. For ante-natal purposes a minimum of 10 hospital beds per 1,000 persons in an area is required, in addition to hostel accommodation, which should be attached to maternity institutions, especially those serving rural areas. There should be short-period residential nurseries for children during the mother's "incapacity." The Group also recommended the organized teaching of "parentcraft" during adolescence.

Reports of Societies

TREATMENT OF MALARIA

At a meeting of the Royal Society of Tropical Medicine and Hygiene on July 23 Sir RICKARD CHRISTOPHERS, the president, gave a paper on the treatment of malaria, a subject, he said, of the greater importance because British troops are already operating in many malarious countries, and the indications are that sooner or later others will be added.

Nowadays, with powerful specific drugs, malaria was looked upon as a relatively mild disease, but in the absence of these drugs it would be seen again in its old grim shape, with infections whose fatal course the physician was unable to stop. The sheet-anchor was the specific drug, which up to ten years ago was quinine only. The cultivation of cinchona bark had unfortunately been concentrated in Java, and with Java now lost to the Allies the supply of quinine must be seriously curtailed. It was doubtful whether other cinchona alkaloids or various derivatives of the quinine type, such as hydroquinine, were available to meet what must now be an enormous demand for efficient substitutes, and it was necessary to turn to recently developed synthetic antimalarial drugs.

The first antimalarial compound ever to be produced was plasmochin, synthesized in 1924-6, and this was followed in 1932 by atebrin, probably the most powerful antimalarial at present known. Since then many compounds had been made in different countries, all more or less closely related to or identical with atebrin or plasmochin; thus quinacrine, acriquine, and mepacrine were respectively French, Russian, and British atebrin, and praequine, plasmocide, and pamaquin the corresponding equivalents of plasmochin. It was stated that biologically mepacrine, the British product, was indistinguishable from atebrin, and it seemed a pity to have changed the name.

Plasmochin could not be considered a satisfactory substitute for quinine in the treatment of the acute disease, nor, by itself, in the after-treatment or prophylaxis, but atebrin had come to be generally accepted as equally effective with quinine. With atebrin not more than 0.3 g. in the day was given, in three doses of 0.1 g. The toxicity did not seem to be great, but atebrin showed quite definitely some cumulative effect, and therefore the daily total was fairly well fixed. Usually in the acute attack atebrin was given for a period not exceeding 7 days, and if necessary repeated again after an interval. In prophylaxis the chief difference from quinine was in the avoidance of continued daily administration; this again was on account of the cumulative effect. Usually the dosage was rather cautious, say 0.2 g. on two successive days in the week or even at longer intervals. Atebrin was a powerful yellow dye, and its administration was liable to give rise to yellow coloration of the skin, but this was in no way related to jaundice and it had no disadvantage except the cosmetic one. It was supposed that atebrin did not, like quinine, precipitate blackwater, but it was perhaps early to be completely sure on that point.

One feature in which atebrin had a clear advantage over quinine was its suitability for intramuscular injection. The treatment of the ordinary case of malaria was best carried out by oral administration, but should there be any sign of cerebral or other pernicious manifestations parenteral administration was a matter of urgency. The intramuscular use of quinine in such circumstances was quite unjustified, as the necessary rapid absorption could not be expected. Intramuscular injection was in fact not so much used in pernicious malaria as in the treatment of cases of a chronic kind thought to be resistant. Actually the use of intramuscular quinine for such a purpose was largely the perquisite of the doctor babu or low-class practitioner, and in the opinion of many it amounted to malpractice. The results at best formed a necrotic mass in the tissues and at the worst led to tetanus or serious sloughing and other evils. With atebrin, however, it appeared to be accepted as the correct procedure, and Sir Rickard explained that the difference was due to the different hydrolysis—the splitting up of a proportion of the salt into the base and "free" acid—of the two drugs. With atebrin the hydrolysis was negligible, so that the sloughing of the tissues after injection was not experienced to anything like the degree that it was with quinine. He added that it was improbable that the last word in synthetic antimalarials had been said. Certain arsenical compounds had been shown to have a sterilizing effect on certain forms of malaria. Sulphonamide preparations might yet prove useful, and a compound of the synthalin type had also been found effective.

Dr. WILLIAM HUGHES of Lagos followed with a short note on the treatment of malaria in a hyperendemic zone. In the treatment of troops in such an area, he said, antilarval methods were out of the question. He would recommend nothing beyond the mosquito net and the maintenance dose of quinine, just as with the civilian. He favoured 5 grains daily as the routine treatment and 30 grains during the acute stage.

Prof. WARRINGTON YORKE said that in losing Java we had lost 90% or more of the world's supply of quinine, and if increasing numbers of our troops were operating in malarious countries and more and more of our ships calling at malarious ports, there would be a great demand for an adequate supply of the only practical substitute for quinine—namely, atebrin (or mepacrine)—and the conservation of the limited supplies of quinine remaining. If quinine was to be saved the economy must be in the large amounts used for prophylactic treatment. Prof. Yorke added that he had listened with surprise and consternation to the president's denunciation of the intramuscular use of quinine. When the president said that it was unjustifiable to treat serious cases with pernicious manifestations by means of intramuscular quinine because the necessary rapid absorption could not be expected, he parted company from him. He had found that one or two intramuscular injections of quinine bihydrochloride were invaluable, only it was urgently necessary to make certain that the patient would absorb some quinine very quickly. He agreed that it was by no means all absorbed, but enough was absorbed to produce the desired effect. He had never seen the terrifying results the president had depicted.

Major ROWLAND HILL said that under-treatment was the greatest fault in the present-day management of subtertian malaria in hyperendemic zones. Of atebrin he said that it was as non-toxic as any drug could be expected to be. He at least had never seen any toxic response. As an anti-relapse drug atebrin was far more satisfactory than quinine, and something between 4 and 7 standard-size tablets a week were helpful in preventing recrudescence.

Sir PHILIP MANSON-BAHR said that he believed quinine and atebrin went well together in subtertian malaria, but he could not agree that the intramuscular or intravenous administration of atebrin was anything like as efficacious as the same administrations of quinine.

Nova et Vetera

CLOSED TREATMENT OF FRACTURES

Dr. Robt. D. Campbell (Kirriemuir) writes:

I see that this question has arisen again—in the article by Dr. J. Trueta (May 16, p. 616). An experience of mine might, perhaps, take the paternity of this technique a little further back. In December, 1901, I was acting as "locum" in a district of the Island of Lewis. One day I received a message to go to a case of a broken leg. This involved a journey by land and sea-loch, occupying the greater part of the day; finishing with a climb up a hill-face in the dark to one of the "black" houses of that time. The patient was a boy of about 14. The leg, from knee to ankle, was enclosed in a thick casing, evidently composed largely of peat pulp. On breaking this off, there was the usual wound in the front, about the middle of the lower leg, where the sharp end of the fractured tibia had penetrated and then been retracted. The fracture was in a very good position. There had been a good deal of leakage, but this had been well absorbed by the peat casing. After spending the night at a shooting lodge, I took him by sea next day to Stornoway. The eeriness of the situation, the dim light and the peat reek, with the unwashed look of the people and the undertones of the Gaelic, made me ask myself if what we were witnessing was not the survival of a surgical procedure which might have come down even from Palaeolithic times. I wondered sometimes what would have happened to the leg if it had been left alone.

Correspondence

Social Medicine

SIR,—As a member of our local group committee, I have been much interested in the various discussions on this subject and also in the letters in your *Journal*. It seems to me that there is a confusion of ideas, especially among the consultants. Surely the preventive side of medicine—such as housing, employment, diet, wages, sanitation, heredity, environment, etc.—is the concern of the M.O.H.s and the Ministry of Health. It is quite useless telling the busy general practitioner that he is to prevent his patients getting ill and to diagnose their complaints before they have any physical signs. The fact remains that they come to him ill, and he has to deal with them on the spot and help them immediately. It matters not if the doctor is a panel doctor, a paid State doctor, or a private doctor; his success will depend on his ability to deal with his patients clinically (of course Prof. Ryle is right to use this expression).

I personally don't think it matters a row of pins, from the patients' point of view, what type of practice the future scheme is made of. What does matter is that the members of our profession shall be the right type of man and woman, keen on medicine, with a good training, and, if possible, with compulsory house jobs and postgraduate work: and, may I add, with as little clerical work as possible.—I am, etc.,

Hampstead. HAROLD VAN PRAAGH.

The Planning Commission's Report

SIR,—May I offer the following opinions on the Planning Commission's interim report?

1. The Commission is to be congratulated on its achievement.

2. The majority view (paras. 47, 48, 49), envisaging the suggested reorganization in hospital, consultant, public health, and other services and standard form of health centre, is well reasoned, sound, and acceptable.

3. A whole-time salaried medical service would be wholly bad for the profession and the public. It bristles with unpalatable features and would "flatten" two essential points in any good medical service: (*a*) the individual general practitioner's independence in medical (and other) thought; and (*b*) the spur to achievement given the practitioner by the knowledge that legitimate rewards—humanitarian, professional, financial—are only his in direct proportion to his efficiency and endeavour.

4. There is no need for a whole-time service (or for the third, half-and-half, scheme). All its good points, and much more besides, are encompassed by the scheme outlined in the majority view.

5. Many of the advocates of a whole-time State service seem intolerant when not dogmatic or fanatical. Obviously good points against whole-time service, such as free choice of doctor and bureaucratic stultification, cannot be dismissed as "bogies" or "resuscitated platitudes." With gentler thought it can be realized that the community, "who want a complete medical service" (Dr. A. R. Fox, July 11, p. 53), will get a complete service in the scheme envisaged in the majority view—a scheme in which the profession loses little or nothing, gains a lot, and is spared a great deal. "No one can be so short-sighted as to imagine that the end of the whole scheme will not be a whole-time salaried medical service. . . . Let us have something new: it has to come anyway" (Dr. G. G. Airey, July 11, p. 52). What is to be gleaned from these and similar statements? Such obsessed authors should realize that there is nothing inevitable about a whole-time salaried service; on the contrary, many of us have found that the majority of our colleagues view it with disfavour if not with abhorrence. They might also consider the letter by the serving officer in the *Supplement* of July 18 (p. 6), which drops an authoritative hint on what a State service can be like, and advances a plea "which I am sure will be echoed by the great majority of doctors who, like me, are temporarily with the Forces, to put on the brake, strongly, and stop this precipitous rush towards State medicine." The lay press teems with evidence of the extravagance and inadequacy of State control, and of the frustration forced on the individual by what the late Lord Chief Justice Hewart called "the new tyranny"—bureaucracy.

6. Dr. T. D. Culbert's belief (July 18, p. 79) that "since a capitation fee is retained the major evil of the present panel scheme is retained—namely, the inability of the doctor to act justly, according to his lights, towards his patient for fear of offending him and losing financially by a transfer"—cannot be supported when one reads in the report (para. 69) that the capitation fee is but one of the three parts of which a doctor's remuneration would consist, and that another would be a basic salary.

7. In 13 years of general practice in all manner of communities I have frequently deplored the present system, but nevertheless feel convinced that State medicine would be a most unhappy blunder, and would indeed point the lack of "the necessary will and the necessary perseverance." To a G.P. the majority-view proposals seem almost too good to be true, giving maximum benefit and minimum tears to patient and doctor, with one notable exception.

8. As Dr. Culbert's letter notes: "Close liaison between the general practitioner and the hospital is not envisaged nor is the need for it stressed enough." Here is a real deficiency, and this deeply important point forms the subject of the admirable article by Mr. Staveley Gough and Dr. Duffus (*Supplement*, July 18, p. 5), which should be read by all interested as a most constructive complement to the Commission's report. We recognize that the medical efficiency of any scheme rests on the efficiency of the family doctor. Create the "general practitioner hospital unit"—i.e., set aside hospital wards for the treatment of cases by general practitioners, with the freedom for the latter to seek specialist help when necessary, as at any other time—then would many patients be given an additional very real benefit; the G.P. would be afforded continuity of treatment, and G.P. prestige and standard would be raised.—I am, etc.,

Englefield Green, Surrey. N. MORTIMER VALLELY.

Use of the Term "Orthopaedic"

SIR,—In suggesting that orthopaedic surgeons should confine their activities to "the treatment of deformities" Brigadier Max Page (July 18, p. 79) is approaching the subject from the point of view of a surgeon who finds part of the orthopaedic field attractive, and would like to put up a fence on the far side of it to keep the orthopaedic surgeon out! If, however, we approach the subject from the interests of the patient and of the general practitioner, it is clear that there is great advantage in giving the orthopaedic surgeon free access to treat injuries of bones and joints, and the opportunity of teaching pre- and post-graduate students in this field.

Sir Robert Jones said, when delivering the Lady Jones Lecture on crippling due to fractures before the University of Liverpool in May, 1925[1]:

"It will, I think, be generally agreed that the teaching of the proper treatment of fractures can only be effective when based on experience, not of mechanical detail alone, but also of the principles which relate to deformity. Every fracture should be looked upon as a potential deformity. Some of these deformities develop in very insidious ways. They may be traced to omissions or commissions, or both. They may arise during treatment or when treatment is discarded. The least obvious frequently prove the most disabling. . . . The surgeon called upon to teach should possess the experience enabling him to visualize all such difficulties and dangers which are sure to encompass the practitioner in after-years.

"Team work and segregation in many fields of surgical endeavour saved the lives of patients and the reputation of surgery. This became evident in fractures more than in any other branch of work. I have no hesitation in saying that greater progress was made in the treatment of fractures during the four years of war than had occurred during a generation in our big teaching hospitals.

". . . there is no mind so comprehensive that it can keep pace with all the requirements of modern surgery."

These are the carefully chosen words of a great surgeon, a very wise, considerate, and open-hearted man. It is surely right that there should be team work among surgeons. Some should confine themselves to the study and the treatment of the ills and accidents of the locomotor system. These men become more and more expert in the treatment of fractures.

[1] *British Medical Journal*, May 16, 1925.

Could anything be more illogical than an attempt to exclude a surgeon from the treatment of fractures because he has given up abdominal surgery!

The training and experience of an orthopaedic surgeon involve close study of the biology and reactions of the locomotor system. These possess characteristic differences from those of the viscera. These two systems differ widely in their function in reaction to injury and inflammation, in the methods which will restore function, and in the relative speed (or lack of speed) in their response. There is a difference, too, in that after a well-chosen and well-executed operation on the viscera the surgeon's work is often largely done, whereas the locomotor system commonly demands long and watchful rehabilitation. The good orthopaedic surgeon must combine the mechanical aptitude and craftsmanship of the engineer with the understanding, the gentleness, and the patience which living tissues need.

So to limit the field of orthopaedic surgery that it would fail to attract young men of first-class ability would be disastrous for all those crippled or threatened with physical disablement; for *unless orthopaedic surgery is very good it is very little good!* Well knowing this, Sir Robert Jones,[2] having outlined the orthopaedic field much as it is now widely accepted, says:

"This definition admittedly covers a large area of surgery, and for this reason will attract the very best of our young surgeons. These are the men whom we specially desire to attract in order that they may devote themselves to a very intricate branch of work, bristling with problems which require solution, and demanding the highest operative skill."

To the orthopaedic surgeon a difficult fracture is a fascinating problem, to most other surgeons a confounded nuisance! Max Page is indeed an exception; he has given proof of his continued interest in orthopaedic work and has been welcome. His present attitude is unlike him, and his proposal is indefensible.—I am, etc.,

Oxford. G. R. GIRDLESTONE.

SIR,—It would appear that Brigadier Max Page in pleading for a more restricted use of the term "orthopaedic" has changed his views. On Oct. 1, 1935, when he gave his presidential address before the Section of Orthopaedics of the Royal Society of Medicine (*Proc. roy. Soc. Med.*, **29,** 63) he said, "Orthopaedics has so expanded that it may now *properly* be considered as that section of general surgery which deals with *any* disorder of the locomotor system." (Italics mine.) I cannot get up much enthusiasm about these definitions, but if we must have one then I am quite prepared to subscribe to Brigadier Page's. His letter gives one the impression that what he really fears is that the orthopaedic surgeons are using the term "orthopaedics" in such a way as to deny to surgeons who are not so labelled the right to treat disorders of the locomotor system. There is ample evidence that this is not so; two examples will suffice: Mr. Hey Groves has been President of the British Orthopaedic Association, Mr. Max Page President of the Orthopaedic Section of the R.S.M.—I am, etc.,

Oxford. H. J. SEDDON.

SIR,—Brigadier Max Page states that according to the O.E.D. the word "orthopaedic" became current in this country about 1840. The term really began to make its way with the founding of the Royal Orthopaedic Hospital in Bloomsbury Square in that year. The founder of the hospital was W. J. Little, a physician to the London Hospital, who has been regarded as the father of orthopaedic surgery in England. He performed the first tenotomy for the cure of deformity in London in 1837, and some years later described spastic paraplegia in infants, a disease to which his name was subsequently attached. But the originator of the word "orthopaedic" was Nicholas André, professor of medicine of the Royal College in Paris. In 1741 he published a work in two volumes entitled *Orthopaedia; or, The Art of Correcting and Preventing Deformities in Children,* which was translated into English. André coined the term from two Greek words, "orthos," which signifies straight, free from deformity, and "paedion," a child. His own comment was, "Out of these two words I have compounded that of orthopaedia to express in one term the design I propose, which is to teach the different methods of preventing and correcting the deformities of children."

On strict etymological grounds the word "orthopaedia" was sufficiently expressive to convey what André implied, but in actual practice the choice was not particularly happy, for there was perpetual confusion in many minds as to the meaning of the word. Apart from the general public, members of the profession with some Latin and less Greek readily assumed that it meant to make the foot straight and no more. But gradually that misconception largely disappeared. Again, in the process of time, like so many other words, "orthopaedic" has expanded its meaning so that it embraces the surgery of bones, joints, and muscles. It is surprising to be told that in America the scope of orthopaedic surgery is in dispute. That country is about the most progressive in this branch of surgery, and a perusal of the *Journal of Bone and Joint Surgery,* a significant title of the official periodical of the two great American orthopaedic societies, should leave no doubt about the meaning of the term to transatlantic orthopaedic surgeons.

Brigadier Max Page fears that if the term "orthopaedic" is to include injuries and diseases of the locomotor system, then their treatment will be restricted to orthopaedic surgeons. That would not be so. For any surgeon who has had the necessary training should be able to engage in this work whether he be a general or an orthopaedic surgeon. But if, as he suggests, the term should be restricted to the treatment of deformities, then there would be a real danger of the orthopaedic surgeon finding himself confined to the cure of deformity. No orthopaedic surgeon that I know would accept such a retrograde conception of his work. The fault is not with the orthopaedic surgeon but with the choosing of a term at once restrictive in its root meaning and expecting it to stand for a branch of surgery more expansive than an eighteenth century physician could possibly have dreamt about or intended. There are many branches of surgery, and some have emerged in our own day—e.g., thoracic surgery and neurosurgery. They are a tribute to the progress of surgery and they are special, requiring a training and a technique of their own. If we are to avoid looseness of nomenclature we must first begin by asking: "What is general surgery"?—I am, etc.,

London, W.1. ARTHUR ROCYN JONES.

Complacency in Anaesthetics?

SIR,—In a leading article (July 18, p. 73) you refer to the prevailing interest in anaesthesia and to the correspondence to which it so frequently gives rise. A 29-years experience in teaching students and the administration of a general anaesthetic on more than 20,000 occasions cannot but result in the forming of some definite impressions and opinions which may be of some interest and possibly of some value to others. Briefly they may be stated as follows:

1. The administration of anaesthetics is an art. Idiosyncrasy to the drugs which we employ is common and a measured dosage system is not successful.

2. A drug can be introduced directly into the circulation to produce an *uncontrollable* state of coma, but this procedure does not appear to be a desirable one, nor does it call for the exercise of the art of the anaesthetist.

3. When complete relaxation of the abdominal muscles is required a deep anaesthesia *without cyanosis* must be obtained. For this purpose a potent anaesthetic agent is required. The best we have is ether. There are degrees of deep anaesthesia, and these can only be recognized if the administrator has a full view of the patient's face and eyes. Complete control over his jaw and upper respiratory passages is also necessary. A closely fitting face-piece is thus undesirable. The mask and drop-bottle form the ideal method for these cases, the mask being something more than a "rag" and the bottle being one that will deliver a steady drop at any desired rate.

4. Machines are of great use for operations requiring a lighter type of anaesthesia, and a machine of some kind is absolutely necessary when remote control of the anaesthesia is required.

5. Ether convulsions are not mentioned in Hewitt's *Anaesthetics and their Administration* (1912) or in Buxton's *Anaesthetics* (1941). Their occurrence dates from the intro-

[2] Cameron Lecture on "The Necessity of Orthopaedic Training," delivered at the University of Edinburgh, Jan. 14, 1921. *British Medical Journal,* Feb. 5, 1921.

duction and general use of machines, and the attempt by means of these machines to give gas–oxygen–ether when a deep anaesthesia is required. Convulsions are a terminal symptom in asphyxia and probably due to oxygen starvation of the brain cells. Cyanosis is not a true indication of the degree of anoxaemia present, and anoxaemia may exist in the case of an anaemic patient without obvious cyanosis. Abdominal relaxation cannot be obtained with a weak anaesthetic agent without producing a degree of anoxaemia, and this condition persisting may give rise to convulsions. Do administrators always remember that their patient requires at least 250 to 300 c.cm. of oxygen per minute? Under no circumstances should a patient be deprived of his full supply of oxygen. I have never seen a case of ether convulsions.

6. Since entirely discarding chloroform in 1916 *as an agent for the induction of full anaesthesia*, I have had no anaesthetic deaths. Grave emergencies rarely occur, and it is many years since I had occasion to perform artificial respiration.

A death rate on the table of between 1.3 and 1.8 per 1,000, or a record such as that described by Mr. Hamilton Bailey, accepted with complacency, must, in the minds of many of us, give rise to a sense of wonder.—I am, etc.,

Dundee. ARTHUR MILLS.

Anaesthetic Death in the Surgery

SIR,—The following experience in a general practitioner's consulting room will, I feel sure, be interesting to your readers.

A girl aged 8 years was brought into my surgery one night about two months ago with a severe supracondylar fracture of the right humerus. As the nearest hospital was over 7 miles away, and the shock produced in sending her there was taken into consideration, I decided to reduce the fracture in my surgery. I accordingly administered an ether–chloroform mixture (3 to 1), open mask method, and with the assistance of a nurse, to whom I handed the mask after the child was apparently under, I reduced the fracture. This had barely been done when my attention was called to the child. She had stopped breathing and was practically pulseless. I promptly began artificial respiration for about one minute, then told the nurse to carry on while I went to open a cupboard for the purpose of giving an injection. This delay took about 1½ minutes. I injected 2 c.cm. anacardone into the right deltoid, then again took over the artificial respiration from the nurse. After half a minute I gave this up and decided to massage the heart. I dug my left hand under the costal cartilages and placed my right hand over the praecordium and did a cardiac massage for a quarter of a minute. The sense of relief when the child took her first breath can be imagined.

It would be interesting to know what the consensus of opinion is with regard to general practitioners accepting a responsibility of this type, which seemed justified in the circumstances. Death in a surgery and death in a hospital under these conditions are regarded quite differently by the layman. The one spells ruin for the G.P.; the other is a natural event in a hospital fully staffed.—I am, etc.,

Maltby. A. H. BARTLEY.

Trichlorethylene as General Anaesthetic

SIR,—In view of the increasing use of trichlorethylene as a general anaesthetic we feel that the following case will not only be of interest but may perhaps serve as a warning too.

The patient, a woman of 25 with a nodular goitre showing no toxic symptoms, was chosen as a suitable case for trilene anaesthesia. Her electrocardiogram showed no abnormality, the pulse rate was 72, B.P. 115/75, and her Goetsch test for sensitivity to adrenaline was negative. She had the routine premedication for a thyroidectomy, which consisted of 30 grains of chloral by the mouth the night before operation, a further 30 grains of chloral 4 hours before operation, and omnopon 1/4 grain with scopolamine 1/125 grain hypodermically 1½ hours before operation.

She came down to the theatre quite calm and drowsy. After local infiltration of the thyroid area with 120 c.cm. of 0.5% procaine and 1:150,000 adrenaline, general anaesthesia was induced by 100% oxygen passed first over and then through trilene in a Boyle's bottle. Blind nasal intubation was performed after a few moments, and the patient's condition seemed to be satisfactory; she was breathing quietly and regularly and was a good colour. Her blood pressure taken immediately after intubation, however, showed that her heart was fibrillating at a rate of about 140 beats per minute. The systolic pressure was 140, the diastolic varied from 80 to 110. Her colour remained good. The trilene was discontinued immediately, 100% oxygen only being administered and the pulse continuously observed. After about 5 minutes the fibrillation was replaced by a series of coupled beats, quite forcible in character, the rate slowly decreasing. This continued for 40 minutes. Anaesthesia was continued under nitrous oxide and oxygen, using a high percentage of oxygen. When the operation was completed the pulse had become quite regular at 80 beats per minute and the B.P. was 140/90. She was returned to the ward in good condition and has made an uneventful recovery. An electrocardiogram taken 5 days later shows no organic change except some loss of ventricular tone.

The most probable cause of this patient's fibrillation seems to us to be the trilene. We have never seen a case of fibrillation during an operation in a case of non-toxic goitre with a negative Goetsch test, and we do not think the adrenaline is a likely cause in this case. The close resemblance chemically between chloroform and trichlorethylene should, on theoretical grounds at least, make us be on the look-out for abnormal cardiac rhythms. Dr. Langton Hewer,[1] in his recent review, suggests that there is no evidence of this drug having any marked toxic action on the heart, and an examination of the literature supports this view. Nevertheless we feel it is of value to record this case.—We are, etc.,

K. G. LLOYD-WILLIAMS.
Royal Free Hospital, W.C.1. DAVID HEWSPEAR.

Treatment of Scabies

SIR,—My attention has been drawn to the leading article on scabies (July 11, p. 44) in which some misconception as to the value of treatment by benzyl benzoate has crept in.

You state that benzyl benzoate is liable to cause an intractable scrotal dermatitis. It would be interesting to know what evidence there is for this statement. So far I have not seen it recorded, and from my own personal experience in a considerable number of cases I have not come across it. It has, of course, been recorded by several observers in the case of derris and rotenone preparations. There is some truth in the statement that the spirit soap preparation of benzyl benzoate gives rise to smarting when applied to the skin, especially when there is much secondary infection. This difficulty has, however, been overcome without loss of efficiency by the introduction of a benzyl benzoate emulsion. This emulsion has the further advantage of obviating the use of spirit and soap, both of which are at the moment in short supply.

While there is no doubt that the efficacy of the classical method of treating scabies by sulphur ointment has been amply proved, it has the disadvantage of being messy and, unless properly controlled, is liable to give rise to dermatitis. At the present time, when supplies of soft paraffin for the ointment and soap to wash the clothes are limited, this method is not, for economic reasons, well suited for treatment on a large scale.

The Advisory Committee on Scabies of the Ministry of Health, in the light of work done by K. Mellanby and others, has come to the conclusion that the preparation of choice is a 25% emulsion of benzyl benzoate prepared in accordance with the instructions in the *National War Formulary*. It is necessary to add that this treatment cannot be carried out satisfactorily by the patient himself, but must be applied by someone who has been given full instructions as to the application. This recommendation was accepted by the Ministry of Health and is repeated in the Ministry's revised *Memorandum on Scabies* which will appear shortly.

I may add that the Executive Committee of the British Association of Dermatology, after consultation with representatives of the Society of Medical Officers of Health, has come to a similar conclusion.—I am, etc.,

A. M. H. GRAY.
London, W.1. Chairman, Advisory Committee on Scabies.

SIR,—I notice the opinion is expressed in your leading article of July 11 (p. 44) that sulphur ointment, properly applied, is the most effective and the easiest treatment available. This

[1] Hewer, Langton, *Proc. roy. Soc. Med.*, June, 1942, p. 466.

has always been the treatment advocated here, and it has met with considerable success. I agree with you when you say that the whole solution of the problem appears to be in the direction of more accurate diagnosis and not only inspection but treatment of contacts. I would like to add that it is desirable to master one method in detail rather than experiment with the most recently advertised remedy. You evidently consider benzyl benzoate a second best to sulphur, although a memorandum of the Ministry of Health dated April 30, 1942, describes a 25% emulsion as the preparation of choice.

Two quite unnecessary instructions are commonly given to patients, doubtless copied from one book to another and from one set of directions to another. The first is to put on clean underclothes after the initial bath, and the second is to take a daily bath while under treatment. Since the essence of the sulphur method consists in thorough saturation with sulphur ointment for three or four days, and since baths of themselves do not cure scabies, there is no advantage, but rather the contrary, in taking them between the initial hot bath and the final hot one preceding terminal disinfection. Seeing that sulphur ointment treatment is admittedly somewhat messy, and bearing in mind that fomites do not carry infection to any extent and that in any case the underclothes will become saturated with sulphur ointment, there is no point in putting on clean underclothes after the initial bath as is commonly directed. Our routine directions run as follows:

Scabies is a contagious disease spreading readily from one person to another by contact and to a less extent by infected clothing and bedding. It is due to the itch mite burrowing in the skin and breeding there. The mite is very small and barely visible to a person with good eyesight. Cure is simple and certain if the following instructions are strictly followed, but it is most important to treat all affected members of a household at the same time and equally thoroughly, otherwise infection will persist and symptoms will return. The chief symptoms are itching spots on the hands, wrists, arms, legs, and elsewhere. The itching is worse at night or when the patient is warm.

Read Carefully

1st day.—Scrub yourself thoroughly in a hot bath with soap (preferably soft soap) and a nail brush. Cut finger- and toe-nails short. Dry yourself and while still warm apply the sulphur ointment well everywhere except face and scalp. Pay particular attention to skin between fingers and toes. Continue to use the same day and night clothes and bedding. The towel used must be boiled or placed in weak disinfectant and laundered.

2nd day, 3rd day, 4th day } Once each day apply thoroughly fresh ointment over the old, rubbing well in. Do not bathe or change clothing.

5th day.—Take a hot bath, preferably with a small handful of soda crystals in it. Wash off all the ointment. Put on clean clothes. All clothes and bedding used during treatment must now be disinfected.

Do not expect all itching to stop at once. Do not repeat treatment without medical advice. If itching spots return seek medical advice. It is most important to watch all members of the household for itching spots, and to make certain that all infected persons in the house are properly treated. Treatment, advice, and disinfection by the public health department are free.

—I am, etc.,

Exeter. G. F. B. PAGE.

SIR,—I should like to be permitted to criticize under the following heads your leading article on the subject of scabies.

1. "Reproduction probably takes place both sexually and parthenogenetically." At the risk of displaying abysmal ignorance, I should like to ask for chapter and verse for this statement, as I have not previously encountered it.

2. "It appears that no substance has yet been tried which is superior to the old stand-by—the 10% sulphur ointment of the *B.P.*—or to the polysulphide preparation known as 'Marcussen's ointment' or 'kathiolan.'" This was certainly not my deduction from the paper of Mellanby, Johnson, and Barclay.

3. "The only other sarcopticide which gives results in any way comparable is benzyl benzoate, of which a 20% emulsion in soft soap and spirit appears to be quite satisfactory. There is, however, a serious objection to this application in that it is liable to cause an intractable scrotal dermatitis. . . . Moreover, it is not very suitable . . . for it always causes a certain amount of stinging, and if applied to a raw area . . . is extremely painful." It is evident that the pain and stinging are chiefly caused by the spirit, and the dermatitis by wartime soft soap. Both of these objections are very largely overcome by using aqueous emulsion of benzyl benzoate. The writer of your article has chosen for special mention the type of benzyl benzoate preparation which could give rise to objection, and has omitted the types which are nearly painless, and safe as well as effective. Personally, I find that aqueous benzyl benzoate emulsion is effective, safe, clean, easy to apply, and acceptable to patients, and am glad to find that it is held in good repute by those who should know.

4. I find myself in agreement with your remarks about the standard of diagnosis, and have to record that it took me many months to learn what I was looking for.

5. I regret that you have omitted to make reference to a standard of cure which is generally applicable to clinical as opposed to research practice. Personally, as the result of observation, I consider any sign of the disease within three months of treatment as a relapse, and am not prepared to accept a cure under that period. To me, therefore, series of cases which show a follow-up of only a few days are valueless, and indeed dangerous in that they tend to perpetuate a false idea of the value of various medicaments.—I am, etc.,

I. C. MONRO,
Elgin. Medical Officer of Health.

*** The writer of the article on scabies got the impression that the acarus reproduced parthenogenetically from an article by Prof. P. A. Buxton in which it was stated that the pairing of *S. scabiei* has not been observed. On rereading the article (*B.M.J.*, Sept. 20, 1941) he admits he was wrong in drawing the inference of parthenogenesis from this statement.—ED., *B.M.J.*

Treatment of Malaria in England

SIR,—I have read with considerable interest the article on the diagnosis and treatment of malaria in England by Prof. Warrington Yorke (July 18, p. 61). There are one or two points in the suggested treatment which need comment. First, Prof. Yorke suggests the sulphate of quinine for the "ordinary" case. I am inclined to prefer the bihydrochloride, as it is more easily absorbed and is less of a gastric irritant. Furthermore, it can be combined with acid. hydrobromic. dil. to lessen the effects of "quinism," and with liq. arsenic. hydrochlor., a useful adjunct in malaria. Quinine should be prescribed with special reference to the cycle of the parasites and not in the stereotyped "t.d.s." manner. The ordinary "benign" attack usually starts at about 2 o'clock every third afternoon, which means that the parasites begin to invade the blood stream at about this time. It was therefore my custom to get into the circulation as much quinine as possible before the parasites began their "invasion." I accordingly gave the required doses at 6 a.m., 10 a.m., and 2 p.m.

In his treatment of the more severe types of malaria, Prof. Yorke suggests intravenous quinine in 1/2 to 1 pint of 3% saline. Intravenous quinine is admittedly the only remedy, but 20 c.cm. of distilled water or saline is all that is necessary, particularly in general practice. It is considered advisable to add a minim or two of 1 in 1,000 adrenaline chloride solution when giving intravenous quinine. Organic arsenic intravenously seems to help in chronic or resistant cases. An occasional injection is all that is necessary.—I am, etc.,

London, W.1. E. S. FENNELL.

Recommendations of Radium Commission

SIR,—The recommendations of the Radium Commissioners outlined in your issue of July 11 (p. 48) call for certain comments. The first concerns the status of the Commissioners themselves. On this point the Cancer Act is quite clear. The initiative in implementing the Act rests solely with the county councils, who, after consultation with the staffs of the local hospitals and with local organizations of registered medical practitioners, shall submit their arrangements for the approval of the Minister. The Radium Commissioners are not mentioned from beginning to end.

On Feb. 13, 1939, during the third reading of the Cancer Bill, on the proposal of the Minister of Health, Dr. Walter Elliot, a provision whereby local authorities must consult the Radium Commissioners was deleted and replaced by another provision whereby the Minister was to be advised by a subcommittee of the Medical Advisory Committee. It was under-

stood that local authorities might, if they wished, consult the Radium Commissioners, but only informally. Dr. Elliot expressed the hope that this plan would meet the fear of some Members that radium was given too prominent a place in the Bill, and that local authorities were going to be placed under a technical commission. The fears of these Members were well founded. Dr. Elliot no doubt meant what he said, but he was evidently not binding his successors; for the Commissioners, so far from being relegated to the background as was the intention of Parliament, continue to dominate the situation, urging the country to get on with the job and telling us how to do it.

Among other things, they recommend that each centre should be under a whole-time director and that the radiotherapist (who may or may not be the director) should be in full charge of all radium and *x*-ray therapy. This means that those of us who use *x* rays only would be faced with the alternative either of subordinating ourselves to men less experienced in *x*-ray therapy than ourselves or of going out of business altogether, losing our practices and our main interest in life. No doubt the Commissioners regard me and those like me as obstacles to the cure of cancer, so much dead wood to be removed before everything in the garden is made lovely.

Some of us began *x*-ray therapy long before the Commissioners were thought of. For many years we have instructed and examined for the diplomas most of the younger radiologists in the country. For many years the patients from one of the Commission's own radium centres in another town have been sent to me because the Commissioners failed to provide *x*-ray therapy, being apparently unaware of its necessity. Most radium centres, having failed to obtain the results they expected from radium, have come to rely more and more on *x* rays, and some of them have sought my advice regarding technique. Even after the fiasco of the Erlangen school in the early 'twenties a few of us retained our faith in *x*-ray therapy. It was we who, through years of scepticism, discouragement, and sometimes scorn, rescued and nursed it, believing that the craze for radium, then in full swing, was not destined to last. Events have proved that we were right; for, except in a few situations, radium treatment must, in relation to the magnitude of its promise, be accounted one of the major disappointments of medicine. We backed the right horse, the Radium Commissioners backed the wrong one. They backed our horse when the race was over and now they calmly propose to relieve us of our winnings.

It is, of course, essential to ensure that radium is, within its limited sphere of action, only administered on scientific principles, but this end can be achieved without penalizing those of us who bore the burden and heat of the day in proving to the Commissioners and others the superior merits and wider applicability of *x* rays. Whether it is in the public interest that those of us who showed a sounder instinct than the Radium Commissioners should now be prevented by them from continuing our work I leave it to your readers to judge. In my opinion, where there is so much to learn, every shade of thought and line of inquiry should be allowed to develop unfettered by artificial restrictions.—I am, etc.,

Cambridge. FF. ROBERTS.

District Nursing Service

SIR,—Lord Horder, writing as Chairman of Council, Greater London Provident Scheme for District Nursing (July 25, p. 109), must surely be referring to London only when he says that "much too little use is made by doctors with panel practices of the facilities afforded by the district nursing service."

B.M.A. figures for 1937 show that out of 26,520 general practitioners 17,787 were engaged in panel or "mixed" practices. Figures for 1938 show that out of a population of 46,200,200 there were 19,959,000 entitled to National Health Insurance benefit. It is generally accepted that the latter, with their dependants, account for over 90% of the population. This being so, it would appear that the bulk, if not the whole, of the district nursing services is concerned with panel patients and their dependants, and if the district nurse is a busy person it may well be because her services *are* made use of by the panel doctor. Where her services are not fully used by a particular panel doctor it has to be remembered that there are degrees of competence in nurses as well as in doctors; sometimes, perhaps, she is not always to be relied upon and the doctor is wise to insist upon seeing the patient himself. Lord Horder instances a case of cellulitis, but we do not know what this means. Perhaps the patient was very ill and should have been in bed; or perhaps it was a mild cellulitis of the finger and the doctor wished to trust to no judgment but his own as to the course that the infection was taking; or perhaps it was discharging pus and perhaps the nurse was in attendance upon one of this same doctor's midwifery cases.

I venture to suggest that Lord Horder's reproof, while no doubt justified in certain instances, is altogether too general, and that the panel practitioner above all others has the most reason to hold in high regard the services provided by district nurses, without whose help he could hardly sustain his work.—I am, etc.,

Buntingford, Herts. ALAN WIGFIELD.

Urethral Instrumentation

SIR,—I should like to endorse Dr. Vincent Norman's restrained and convincing reply (July 18, p. 80) to Mr. Gordon Bohn's letter on urethral instrumentation.

Mr. Bohn's letter (July 4, p. 25) is an example of the tendency among some specialists to treat the G.P. with contemptuous tolerance, and though the tendency is confined for the most part to the lesser lights and to the less experienced among the specialists, this attitude of mind appears to wax and wane from time to time. To-day it appears to be increasing, and that it should be so is all the more unfortunate when so much is being written and discussed concerning the medical service of the future.

In an article entitled "The G.P. as the Basis of the Medical Service of the Future," which appears in the *Supplement* of July 18, the following observation occurs: "That the G.P. service should be given such a position that it will not fail to attract men of a calibre reasonably equal to that of the specialist." But what is this calibre? Surely the calibre of the specialist is as variable in worth as is the calibre of the G.P. The far-sighted, expert, and experienced specialist understands and appreciates the worth of the G.P. as fully as the fighter pilot appreciates the worth of his ground staff, but to those who cannot attain such a state of mind, may I suggest that they should assimilate the following facts: (1) that the specialist is much more often the product of his unusual opportunity than of his unusual intelligence and skill; (2) that though the specialist may inveigh against the occasional errors of the G.P., the G.P. has to take the largest share in, and to continue to treat, the consequences of the no less frequent errors of the specialist; (3) that the G.P. has to be competent and knowledgeable about many things to earn a living, but that the specialist has usually to be competent in a much smaller and more highly paid field.

It is, I believe, this last paragraph which explains the attitude of some of the specialists towards the G.P. The specialist, because his scope is small and his earnings large, in some cases tends to become insular and arrogant in his views, and, as Dr. Norman observes, "offers evidence of the fatuous and narrow outlook of the one-specialty man."—I am, etc.,

Hampstead, N.W. H. J. S. MORTON.

SIR,—The teaching of urethral instrumentation advocated by Mr. Clifford Morson (June 20, p. 771) is in my opinion most important, and in elderly persons the relief obtained by the catheter for retention of urine due to obstruction caused by prostatic enlargement is immediate and safe. The acute discomfort and pain of a distended bladder is immediately relieved, and it is only by the passing of the catheter that the nature of the cause can be clearly discovered, as no local or rectal examination can make the cause obvious, but a suprapubic palpation will always be necessary and should not be overlooked. I am not referring to organic nervous disease or atony of the bladder, but to retention due to enlarged prostate. I have seen the rubber catheter (normally No. 8 or No. 9) used for years without any unfavourable symptom, and I can speak from personal experience and from the history of other sufferers from prostatic enlargement. I have never seen any haemorrhage from the kidney or bladder, but I have known of ruptures of the bladder walls from over-distension, when the outflow of urine is hampered by obstruction and when a catheter would afford relief.

I do not refer to spasm of the sphincter or to obstruction associated with prostrating diseases of the nervous system. During catheterization the contraction of the detrusor muscle keeps the bladder wall continuously in contact with the urine until it is completely voided. There is consequently no negative pressure (through the gradual emptying by the catheter) which can favour haemorrhage. The relief to the sufferer is immediate and is most gratifying.—I am, etc.,

London, W.8. F.R.C.S.

Epididymitis after Acute Gonorrhoea

SIR,—Lieut.-Col. T. E. Osmond's letter (April 18, p. 507) calls for a reply.

The patient had a right epididymitis. In my opinion this is invariably caused by spread along the right vas from the right seminal vesicle. In the tests of cure and investigation no mention is made of having obtained any sample of secretion from the seminal vesicles, though prostatic beads were free from pus. How much prostatic and vesicular massage was given is not stated, but if adequate drainage was not obtained from the right seminal vesicle relapse was to be expected.

The difficulty in obtaining a specimen from the seminal vesicle is considerable, and the fact that four different venereologists, all experienced medical officers, did not obtain it does not mean that this was not the focus of infection.—I am, etc.,

Capetown. F. W. F. PURCELL.

Active Rehabilitation by C.S.M.M.G. Masseuses

SIR,—Mr. G. O. Tippett has drawn attention in his letter to the truly magnificent work of the R.A.F. orthopaedic centres. The treatment of injuries by active methods—i.e., the maintenance of function during fixation, rather than the restoration of function after fixation—is a basic orthopaedic principle. The organized practice of this principle has been of slow but steady growth. It has, however, received impetus during the war because the expansion of hospital services has given greater opportunity to segregate cases of injury of certain types, and to create a new and better organization to deal with them. It is greatly to the credit of the orthopaedic representatives at the several Ministries that they have taken advantage of these opportunities.

Although Mr. Tippett noticed that the medical officers at the R.A.F. centre he visited were personally teaching and helping their patients, he seems to have failed to appreciate fully the significance of this. Rather, seeking to cast out the mote from his brother's eye before considering the beam in his own, he has tried to lay on members of the C.S.M.M.G. the blame for deficiencies at the hospitals with which he is associated. If he really imagines that chartered masseuses can only give massage and faradism to an injured limb, he is sadly out of date. Members of the Chartered Society are required by its ethical code to work only to the instructions of a qualified doctor. If that doctor (or surgeon) fails to prescribe modern methods of treatment he has only himself to blame; and if he has not the facilities he must blame the organization for which he works, not the C.S.M.M.G. The syllabus of the Chartered Society has been modified to lay emphasis on modern methods of rehabilitation, and post-graduate courses organized by the society are in progress.

There is a first-rate organization for the rehabilitation of the injured at many hospitals of the War Office, the B.R.C.S., the Ministry of Health, and the Ministry of Pensions, as well as the R.A.F. It is true that many other hospitals are backward in this respect, but it is up to us, as orthopaedic surgeons, to overhaul our methods and reorganize our departments. I find chartered masseuses are the keenest and most co-operative people with whom I am associated. I can assure Mr. Tippett that if he will make the effort necessary to introduce modern methods where he works, his masseuses will not let him down.—I am, etc.,

PHILIP WILES, M.S., F.R.C.S.,
London, W.1. Vice-Chairman of Council, C.S.M.M.G.

SIR,—It is astonishing to read in Mr. G. O. Tippett's letter (July 18, p. 81) that "the best effort a masseuse of the C.S.M.M.G. can do is her routine stock-in-trade of massage and faradism to the injured limb." The Chartered Society examines candidates trained in the latest methods of rehabilitation, and the masseuses are fully alive to the scope of modern rehabilitation, which includes heat, massage, galvanism, faradism, diathermy, short wave, ultra-violet light, hydrotherapy, and rehabilitation exercise plus occupational therapy and games.

I feel sure that Mr. Tippett would be surprised if he made excursions from his narrow sphere where patients "lie in plaster and physically rot in bed or loaf about on a stick." I would suggest that he visits the Sector Hospitals and London and provincial teaching hospitals, where he would find departments and wards equipped with suspension sling apparatus, either the standard metal unit or the makeshift Balkan beam unit and modifications; he would find the patients treated from the earliest possible moment in recumbency by progressive active weightless exercise, graded up to active resistance exercise and games, with certain hours allocated to occupational therapy, orthopaedic and diversional in type.

I feel that Mr. Tippett and others must be unaware of the progress in rehabilitation exercise which has been taking place since this war broke out, and also the good results obtained not only in fracture cases, but in spondylitis, peripheral neuritis, poliomyelitis, and rheumatoid arthritis cases, apart from multiple injuries sustained in air raids. The C.S.M.M.G. masseuse has a high ideal and a good training in modern methods, and cannot be blamed if the hospital is unable to afford the necessary ropes, slings, springs, etc., required for modern rehabilitation; no doubt some civilian hospitals may be restricted through lack of funds and the masseuse's efforts appear feeble. It is up to the physicians and surgeons to make full use of the trained C.S.M.M.G. masseuse and "go to it"; the C.S.M.M.G. masseuse and Chartered Society have gone to it!—I am, etc.,

London. N. I. LANCKENAU.

Body Mechanics

SIR,—The theories advanced by the authors of *Body Mechanics in Health and Disease*, which was reviewed in your issue of July 25 (p. 99), are similar to those propounded by Andrew Taylor Still, the original osteopath, 80 years ago, and which have had attention drawn to them since by many others, including myself. Still's conceptions have been disregarded or strenuously denied by the medical profession: now that they are put forward, however, by those with accepted medical qualifications who have been careful not to use the word "osteopathy," these theories are apparently to be given kindly encouragement by the medical profession.

On account of the unfortunate antagonism between the medical and the osteopathic professions—and there are faults on both sides, no doubt—valuable time, experience, and personnel have been, and are continuing to be, wasted. Is it not possible, even at this late stage, for this misunderstanding to be resolved?—I am, etc.,

London, W.1. GEORGE MACDONALD.

Diarrhoea and Vomiting

SIR,—Your annotation under the above heading (July 25, p. 102) prompts me to send you some views I have been forming on the subject in the course of investigations made into the nature of epidemics.

Diarrhoea and vomiting, in an epidemic form, may be more common in infants than older people, but they are of frequent occurrence in the latter and of particular importance as heralding what is to occur in the following winter. Diarrhoea and vomiting are the most common initial signs and symptoms of infections from within, caused by the developmental forms of the *B. coli communis*, resident in the intestinal tract. Although any one of these forms may be the causative micro-organism, the most active are those belonging to the *Proteus*, *Salmonella*, and dysentery groups; and these and the other micro-organisms ring greater changes in infants than in older people, because the former have had less time to develop an immunity against them.

These signs and symptoms are the initial ones of infections from within, because, owing to the micro-organisms residing in the large intestine, the portal system is the one to be first involved on their becoming active; and thus an explanation

is afforded for their incidence in the summer months being a prelude of what is to happen in the winter months. Diarrhoea and vomiting are most common between June and October, because heat augments the other climatic factors which govern infections from within to account for their developing cyclically. An annual cycle is to be detected where the nadir and zenith of the host's resistance are found to occur most commonly in the months of July and January. The chemico-physical changes which the protein in the plasma (wherein resides the host's resistance) undergoes at the hands of climate are the second factor governing infections from within. The micro-organisms in the colon come third, because their activity is determined by the state in which the host's resistance happens to be. Diarrhoea and vomiting have been more common this summer than for some years past; consequently I venture to predict that we will not be so free from influenza next winter as we have been in the last few winters.—I am, etc.,

London, W.1. J. E. R. McDONAGH.

A Depression–Hyposexual–Alopecia Syndrome

SIR,—This interesting case (July 18, p. 67) has unfortunately not been fully investigated. No mention is made of the physical condition apart from the loss of hair, nor of any investigations regarding metabolism (B.M.R., blood sugar, blood cholesterol, blood morphology, etc.), the condition of the pituitary fossa, and other items indispensable for an endocrine diagnosis. Not even the blood pressure or the result of a urinary routine examination has been recorded.

The syndrome itself is not unknown to the endocrinologist. It can occur either as the result of a pituitary (or pituitary-diencephalic) disturbance, representing a beginning or mild form of Simmonds's disease, or it can be of thyroid origin and represent a beginning or masked myxoedema. In both conditions complete loss of hair has been observed, loss of sexual function and mental depression being well-known symptoms of either of them. The onset after vaccination is slightly more suggestive of a lesion affecting the pituitary or the base of the brain, but hypothyroid conditions can occur after any infectious disease.

A proper examination of the patient would probably throw enough light on the nature of his condition to avoid its being regarded as a new endocrine syndrome.—I am, etc.,

London, W.1. H. UCKO.

Saving Cotton-wool and Using Sawdust

SIR,—I was much interested in the article on the use of sawdust as a dressing by Mr. Fitzwilliams because I have used this dressing. I was particularly impressed with its value in a case of psoas abscess with which I had to deal many years ago. A profuse discharge of pus was absorbed by and diffused through the sawdust, and the surrounding skin was kept dry.

A full account of the method of its use will be found in *A Surgical Handbook* by Caird and Cathcart, a book full of wise counsel and in much request during my student days in Edinburgh. I found, as Mr. Cathcart taught, that sawdust from pitch-pine was the most satisfactory.—I am, etc.,

Bushey, Herts. THOMAS FENTEM, M.D.

SIR,—In view of Mr. Fitzwilliams's statement (July 25, p. 105) that one of the reasons for using cotton-wool is its absorbent qualities for septic wounds or where there is discharge the following should prove of interest.

To investigate the properties of various dressings as aids to drainage the following experiment was performed. Lengths of gauze, home-made plaster, and "cellona," 1½ inches wide and eight layers thick, were marked at one-inch intervals. The ends were placed into a bowl containing either citrated blood or coloured water, and the transmission of the fluid noted at various time intervals. The actual figures are not quoted because they varied so much with each experiment, but constant comparative results were obtained. These were: (1) that the transmissibility of the gauze was the most rapid up to six to ten hours, when it was overtaken by the home-made plaster, and that "cellona" in the 24-hour period remained inferior to both; (2) that the transmissibility was more rapid at the start and gradually diminished with increase in the time period; (3) that the transmissibility increased when the materials were dependent. Various other substances were tried, such as jaconet, felt, and bandage, all of which showed no tendency to transmit. Brown wool merely floated on the surface of the fluid. White wool deserves special mention because it is so frequently stated to be a satisfactory dressing owing to its absorbent qualities, but the experiment showed that only the portion submerged in the fluid absorbed and became weighted, and that there was no transmission whatsoever above the fluid level. As a close dressing, therefore, it is useless, as only that part in actual contact with the discharge is absorbent. Since there is no direct transmission it will only serve to retain the discharge in proximity to the wound and macerate the skin. This has been repeatedly noted clinically. When wool is used it should be employed only as an external covering, and should be separated from the wound by a pad of gauze several layers thick.

Hence rather than an economic alternative to cotton-wool, sawdust is a better dressing as it absorbs and transmits well.—I am, etc.,

G. MARIANI,
Senior House-surgeon,
Accident Service.
Radcliffe Infirmary, Oxford.

Obituary

F. DAWTREY DREWITT, D.M., F.R.C.P.

The death of Dr. Frederic Dawtrey Drewitt on July 29 takes from us a physician and naturalist of wide culture and most kindly disposition, a connoisseur of beautiful and interesting things, who was held in affection by friends, old and young, throughout a very long life. Born on February 29, 1848, he was educated at Winchester, at Christ Church, Oxford (where he won second-class honours in Natural Science), and at St. George's Hospital. He qualified M.R.C.S. in 1876 and took the M.R.C.P. in 1879. At Oxford he graduated M.A. and B.M. in 1878 and D.M. in 1883. He was elected F.R.C.P. in 1888. After house-physicianships at St. George's and at Great Ormond Street he held the post of physician to the Victoria Hospital for Children, Chelsea, from 1881 to 1897. At the West London Hospital he was assistant physician and later physician from 1882 to 1902, and then served for many years on its board of management. In an address in 1907 H. H. Clutton wrote: "Attention was first called in England to adolescent or late rickets by Dr. F. G. D. Drewitt, who showed a boy aged 10 years at the old Pathological Society of London in November, 1880. The boy was in the Great Ormond Street Hospital under the late Dr. W. B. Cheadle, and died two years later, when a post-mortem, made by Sir Thomas Barlow and Dr. P. Abercrombie, showed that the case was one of true rickets."

Dawtrey Drewitt was a lifelong student of Nature. He spent thousands of happy hours watching birds and naming wild flowers, or sketching in the open at home and abroad. He had served on the committee of the British Ornithologists' Union, and for many years on the Councils of the Zoological Society, the Society for Promotion of Nature Reserves, and the National Trust for Places of Interest or Beauty. Until 1941 he represented the Royal College of Physicians on the committee of management of the Chelsea Physic Garden, which he frequently visited as its vice-chairman, and his pleasant little book *The Romance of the Apothecaries' Garden in Chelsea* went into a third edition. He also wrote books on *Bombay in the Days of George IV*; and on the *Latin Names of Common Flowers: Their Pronunciation and History*, and a second edition of his *Life of Edward Jenner* appeared in 1933. His sensitive eye and delicate touch were revealed in many water-colour sketches and etchings, some of them shown publicly at the Royal Academy, and in more recent years at medical art exhibitions. At the age of 94 his handwriting was a miracle of shapeliness and legibility.

His well-stored mind, his lively interest in the world around him, and his charm of manner and appearance made Drewitt a welcome companion at the Savile Club (which he had joined in 1877), at the United University Club, at the dining club of the Royal College of Physicians, and at the periodical dinners of the Lucretian Club, which he attended until well past the age of 90. His sixtieth year of membership of the Savile was celebrated by a dinner party given in his honour in the club house. He bore the disabilities of old age with

gentle good humour, and the bombardments of London could not shake his spirit. Though very frail and lonely towards the end he never complained or expected others to put themselves out for him.

MARK RONALD TAYLOR, M.R.C.S.

The death took place at Formby in Lancashire on July 22 of Dr. Mark Ronald Taylor, who was for many years before his retirement a regional medical officer of the Ministry of Health.

He was born in 1871 the son of Thomas Taylor, a surgeon of Bocking, in Essex, who had qualified in 1841, so that between them father and son completed a hundred years' continuous service in the medical profession. Mark Taylor received his education at Rossall and St. Bartholomew's. He qualified in 1894 and started practice at Helston, where for ten years he was also medical officer of health. In 1915 he moved to Acton and was surgeon to Acton Hospital. Both in Cornwall and in Middlesex he was a prominent member of the Insurance and Panel Committees and the Medical Service Subcommittee, and in 1920 he was appointed one of the first batch of whole-time regional medical officers of the Ministry of Health, being stationed for seven years at Norwich and afterwards at Southampton.

For the ten years 1904 to 1913 Dr. Taylor was honorary secretary of the West Cornwall Division of the B.M.A., and, for a while, of East Cornwall too, while that Division was being pulled together. During his term of office he initiated two reforms which eventually affected the whole county. One of these was the placing of the district nursing service on a proper basis. At that time many districts seemed to make their own rules, with the result that some nurses prescribed and dispensed, and some even attended fractures and serious eye troubles without reference to any doctor. In consultation with two other prominent members of the Association, Taylor drew up a set of rules which were adopted, and two medical men were co-opted on to the committee of the District Nursing Association. The other matter was his successful resistance to the suggestion that doctors should give courses of Red Cross lectures for nothing. Taylor was a valiant fighter, and in the West of England, where he was practising at the time and represented his Division, the fight over the National Health Insurance Bill was long and bitter.

In recent years, after his retirement, Taylor went to live near Liverpool, where he continued to do some part-time work for the Ministry, and, until his last illness, served on Medical Boards. He was a keen naturalist and an ardent angler, inventing a number of gadgets which increased the scientific interest in fish and fishing. He was also an earnest student of folklore, and wrote much on the subject. While in Norwich he collected material for a good-sized book on East Anglian folklore, medicine, and magic, but never published it.

GEORGE KEPPIE PATERSON, M.B., F.R.C.P.Ed.

Edinburgh has lost a venerable figure by the death of Dr. G. Keppie Paterson, who had been for more than half a century associated with the Livingstone Dispensary in the Cowgate, of which he was consulting obstetrician and physician for maternity welfare at the time of his death.

George Keppie Paterson was born in 1861, and took his M.B., C.M.Ed. with honours in 1882. Afterwards he studied in Berlin and Vienna. For ten years he was assistant to Sir Alexander Simpson, the holder of the chair of midwifery and diseases of women in Edinburgh University. He acquired an extensive general practice which he carried on until a few years ago. He became in 1891 a member of the Royal College of Physicians of Edinburgh and in 1895 a Fellow. He was one of the oldest members of the British Medical Association, his membership extending over 58 years. In 1903 he became hon. secretary of the old Edinburgh North-East Division, an appointment he held until 1911, and then, for a further ten years, he was hon. secretary of the new Edinburgh and Leith Division, of which in 1924-6 he was chairman. In 1930-1 he was president of the Edinburgh Branch.

One of Dr. Paterson's greatest interests was medical missions. He had travelled extensively in North Africa, Egypt, Palestine, and the West Indies. He joined the Edinburgh Medical Missionary Society in 1890, and was for several years its hon. treasurer and vice-president. It was an abiding joy to him that his professional services during almost the whole of his career should be given to an institution which bore the name of Scotland's greatest medical missionary. Dr. Paterson was a man of high culture and greatly respected in his city. One of his keenest interests was in music, and he even ran a choir in his dispensary.

PROFESSOR MARFAN

Prof. Antonin Bernard Jean Marfan, the eminent Paris paediatrician, whose death without mention of the date is reported by the *Schweizer Medizinische Wochenschrift* of May 9, was born at Castelnaudary in the Aude Department of France on June 23, 1858. He received his medical education at Toulouse and Paris, where he qualified in 1887, and five years later obtained the coveted post of Médecin des Hôpitaux. In 1914, when he was elected a member of the Académie de Médecine, he became the first occupant of a chair of infantile hygiene, and held this post until his retirement in 1928. For many years he was physician to the well-known Hôpital des Enfants Malades in the Rue de Sèvres with special charge of the diphtheria block. His literary output was considerable and of a high order. His principal work was a treatise on lactation which went through four editions and may be regarded as a classic. He was also the author of a monograph on diphtheria, a series of volumes on diseases of infants, and shorter works on periodic vomiting with acetonaemia, puncture of the pericardium by the epigastric route, and diagnosis of sore throat. Besides being founder and editor of the quarterly journal *Le Nourrisson* he was co-editor of the *System of Medicine* with Charcot, Bouchard, and Brissaud, and of the *Treatise of Children's Diseases* with J. Comby. He was well known in this country, where he was elected an Honorary Fellow of the Royal Society of Medicine in 1934.

Universities and Colleges

UNIVERSITY OF CAMBRIDGE

The following candidates have been approved at the examination indicated:

DIPLOMA IN MEDICAL RADIOLOGY AND ELECTROLOGY—*Part II*: G. K. F. Cohen, R. McK. Crichton, T. Culloty, F. Freund, Maria E. Grossman, H. T. Halper, H. R. C. Hay, C. J. C. G. Hodson, D. A. Jennings, M. B. Leitch, J. McM. Mennell, D. J. Mitchell, R. G. Moffat, J. Y. Rabinowitch, Katharina Rosenkranz, A. W. Simmins, J. H. Smitham, Lillian H. Walter.

At a Congregation held on June 20 the following medical degrees were conferred:

M.D.—*G. L. Robinson, *G. O. Richardson, *E. F. Aubert, H. J. V. Morton, R. W. Mason, D. J. Watterson, E. J. E. Topham.

* By proxy

UNIVERSITY OF LONDON

F. G. Young, D.Sc., Ph.D., has been appointed to the University Chair of Biochemistry tenable at St. Thomas's Hospital Medical School. B. W. Windeyer, M.B., B.S.Syd., F.R.C.S.Ed., F.F.R., has been appointed to the University Chair of Radiology tenable at Middlesex Hospital Medical School. Alexander Lawson, Ph.D., B.Sc., has been appointed to the University Readership in Organic Chemistry tenable at the London (R.F.H.) School of Medicine for Women.

WESTMINSTER HOSPITAL MEDICAL SCHOOL

An examination for two entrance scholarships in anatomy and physiology will be held on Sept. 9 and 10. Particulars may be had from the Secretary, Westminster Hospital Medical School, 17, Horseferry Road, S.W.1.

ROYAL COLLEGE OF OBSTETRICIANS AND GYNAECOLOGISTS

At a quarterly meeting of the Council held in the College House on July 25, with the President, Sir William Fletcher Shaw, in the chair, the following officers were elected to take office in October:

President: Sir William Fletcher Shaw. *Vice-Presidents:* Mr. William Gough and Mr. C. G. Lowry. *Honorary Treasurer:* Mr. J. P. Hedley. *Honorary Secretary:* Mr. G. F. Gibberd. *Honorary Librarian:* Wing-Cmdr. F. W. Roques, R.A.F.V.R. *Honorary Curator of Museum:* Mr. Aleck W. Bourne.

L. C. L. Averill (New Zealand) was admitted *in absentia* to the Fellowship of the College.

The following candidates were elected to the Membership:

H. Agar, Muriel Boycott, J. W. D. Buttery, Marie H. Calverley, T. A. Gillie, I. MacG. Jackson, W. J. McCord, Mary K. Lawlor, H. M. Wolff, J. F. B. Wyper.

Medical Notes in Parliament

Health of the Factory Worker

Mr. ERNEST BEVIN, on July 22, presented the estimates for the Ministry of Labour. He recalled the transfer of the Factory Department and its administration from the Home Office to the Ministry of Labour and National Service in June, 1940. Factory inspection and welfare could not be separated from the mobilization and use of man-power. The transfer placed long and valuable experience at the disposal of the Ministry when dealing with the problems of the movement of workers and the physical strain of war conditions. He was happy to say that notwithstanding the bombing of homes and of factories, the health of the population had stood up to the strain. He regretted that the accident rate in factories had increased owing to recruitment of inexperienced workers and expansion of dangerous industries. The Ministry had given attention to problems of skin disease arising out of the war, and, all things considered, the percentage rate was low. Removal to other occupations of workers who were prone to such disease and sick-bays in hostels for immediate treatment had helped to keep it under control.

During the last two years medical supervision and nursing services in the factory had been intensified, and as a result absenteeism had been reduced. Co-ordination between the works doctor and the general practitioner shortened illnesses. Works doctors were valuable in organizing first-aid arrangements and keeping them efficient. They could look after workers who were exposed to special risks, and they performed a great educational service. They attended to the special problems affecting juveniles. The number of doctors employed whole-time increased during the last 2 years from 35 to 150, and part-time doctors from 70 to 550. The Ministry set to work to organize this part-time service for the smaller factories, but was handicapped by the call-up of doctors for the Services. He hoped this work would not be allowed to die at the end of the war. It was additional to the statutory work of the examining factory surgeons and to less comprehensive services in many other factories. He was studying how the certifying surgeons and the examining factory surgeons could be brought more fully into the picture as integral parts of the industrial health services. The technique developed in industrial medicine could be of tremendous value to the medical services of the country as a whole. The Ministry had sought to expand the factory nursing service rapidly and had provided short courses of instruction in conjunction with the Royal College of Nursing. The training continued after the nurses had gone to the works, with the aid of the medical people employed. Hours of work in factories were a vexed problem. After Dunkirk there appeared a danger that the Factory Acts administration would break down. But now man-power had been so mobilized that he was considering the tightening up of hours at an early date.

Tuberculosis Related to Black-out Conditions

Mr. ELLIS SMITH cited a report of the British Medical Association on the health of industrial workers. He said that in too many cases the milk supply to workers engaged in dangerous processes had been stopped. He hoped the lessons of the investigation into silicosis among anthracite workers would be applied to the pottery and asbestos industries. He asked for a national scheme of rehabilitation to be established as soon as possible. Mr. MCNEIL said Mr. Bevin had power to place a medical man within any factory as a servant of the Crown if he did so within the terms of the inspectorate. Figures published that week showed that in Glasgow the rise in tuberculosis was almost confined to the industrial workers. For commercial and professional workers who had not to undertake night-shifts in black-out conditions the figures were almost stable. Mr. LEWIS JONES complained that the report of the Chief Inspector of Factories did not relate the accidents to the number of people employed.

Doctors' "Notes"

Mr. SIMMONDS remarked that whereas there was normally in the winter and spring maximum absenteeism due to bad health, in a number of factories this year absenteeism had been continuing into the summer. In some, absenteeism in June was worse than in any of the spring months. Either the workers were suffering from industrial fatigue resulting from the winter or else there was, now the weather was better, more pressure on the doctors to certify that workers were in need of a rest. Many doctors were now shockingly overworked, and some were not as careful as they ought to be in issuing certificates for absence. Tightening up was essential if production was to be maintained.

Dr. HADEN GUEST said Mr. Simmonds should supply details of his allegations to the Ministry of Labour. Dr. Guest believed they could not be substantiated. He hoped that medical supervision in factories would be increased and extended, and that still more stress would be laid on the preventive side of the doctor's work. Works doctors should consult weekly with representatives of the employees on matters affecting well-being and health. He wondered whether the committee under Sir Geoffrey Shakespeare could give a special medical quota for works.

Sir GEOFFREY intervened to say the problem had been considered by the Priority Committee and efforts were being made to meet the demands of the Ministry of Labour.

Dr. GUEST said the position could also be improved by employment of women doctors. It should be possible to get some of the retired or semi-retired older medical men and women back for this kind of work. Was it possible for panel doctors who were in attendance on the workers in a district to attend to the preventive side of medicine in the factories? Mr. HIGGS produced specimens of doctors' "notes." One, which stated "is unable to follow her employment owing to her aunt's illness," had been accepted by the timekeeper. These doctors' "notes" were issued far too liberally.

Mr. TOMLINSON, replying to the debate, said the British Medical Association and the Trades Union Congress both felt that industrial health work was on the right lines. Asked about discoloration of workers in contact with certain powders, he said the scientific resources of the Allies had been brought in to find a solution. They might find something which would turn girl workers a healthy tan instead of a dirty yellow. The Ministry had failed to determine what were the detrimental effects of black-out on the worker, but believed they were more psychological than physical.

Parliamentary Health and Housing Committee

Lieut.-Gen. Alexander Hood, Director-General of Army Medical Services, on July 21 attended a meeting of the Parliamentary Conservative Health and Housing Committee under the chairmanship of Sir Francis Fremantle. General Hood gave an encouraging account of health conditions in the Armies both at home and abroad, but said increased vigilance would be necessary during the coming winter when hutments and billets would have to accommodate increasing numbers. With advisory bodies to keep it in touch with civilian practice, his Department was now organized on a basis that ensured a complete medical service for the troops.

Mr. Hugh Linstead was elected deputy secretary of the committee to assist Capt. G. S. Elliston, who has been hon. secretary of the committee since 1931.

Compulsory Vaccination and Inoculation

Asked on July 23 by Sir WALDRON SMITHERS to take the necessary powers to make vaccination against small-pox and injections against other infectious and epidemic diseases compulsory, Mr. BROWN declined to do so. He said that recent occurrences had not afforded any justification for such a change of policy, but he would continue to do all in his power to encourage immunization against certain infectious diseases, either as a routine or when special circumstances called for such action.

Appeal Tribunals

Sir WALTER WOMERSLEY announced on July 23 that at present it was not possible to set up tribunals to deal with all the appeals that would be made on war pensions. He was taking full advantage of the arrangement under which cases of serious doubt or difficulty on a medical question could be referred to an independent expert nominated by the President of one of the Royal Colleges. In no case had he rejected the opinion expressed by one of these experts. The medical referees were independent of his Department and were under no pressure from him. Appeal tribunals would be set up as soon as practicable without waiting for the end of the war if doctors should become available. Possibly medical personnel might be spared from the Army.

Deaths from Pernicious Anaemia

Mr. BROWN stated in the House of Commons that the number of deaths from pernicious anaemia registered in England and Wales in 1939 was 1,922; in 1940, 2,167; and in 1941, 2,422. The figures for 1939 were corrected to agree with the 1940 classification of deaths and differed from those published in the Registrar-General's *Statistical Review*, Part I, Table 6.

M.R.C.: Tuberculosis Report

The report of the Tuberculosis Committee of the Medical Research Council is almost complete. It will contain interim recommendations on the steps to be taken forthwith. They will deal with the increased incidence among children under 5 years of age and inmates of mental hospitals.

The Services

CASUALTIES IN THE MEDICAL SERVICES

Temp. Surg. Lieut. CAMERON FRASER, R.N.V.R., who, in the *Journal* of May 30, was reported missing, is now posted as "Missing, Presumed Killed" in H.M.S. *Neptune* in an Admiralty Casualty List published on July 17. He was educated at the Anderson and St. Mungo's Colleges, Glasgow, and took the L.D.S. in 1938 and the Scottish triple qualification as a medical practitioner two years later. He entered the R.N.V.R. as prob. temp. surg. lieut. in March, 1941. His home was at Lhanbryde, Morayshire. He was a member of the B.M.A.

Temp. Surg. Lieut. ERIC BERESFORD RIDING, R.N.V.R., is reported "Missing, Presumed Killed" in H.M.S. *Neptune* in an Admiralty Casualty List published on July 17. He was educated at the University of Liverpool and graduated M.B., Ch.B. in 1938. After holding a post at the David Lewis Northern Hospital, Liverpool, he took an appointment as ship surgeon with the Holt Line in September, 1939, and entered the R.N.V.R. as prob. temp. surg. lieut. in February, 1941. His home was at Ormskirk. He was a member of the B.M.A.

Wounded.—War Subs. Capt. J. McD. Dougan, M.C., R.A.M.C.

Missing.—Capt. J. A. Falk, R.A.M.C., Major A. C. Glendinning, I.M.S., Capt. W. O. James, R.A.M.C., Col. G. P. Kidd, M.C., R.A.M.C., Major J. Parkes, R.A.M.C., Capt. N. C. Rogers, R.A.M.C., attached R.T.R.

DEATHS IN THE SERVICES

Surgeon Rear-Admiral ARTHUR RICHARD HARRIE SKEY, R.N. (retired), of Fareham, Hants, died in the Royal Naval Hospital, Haslar, on July 15. He was educated at Bart's, took the M.R.C.S., L.R.C.P. in 1896, and the M.B., B.S.Lond. in the same year. Entering the Navy soon after, he attained the rank of surgeon rear-admiral on July 1, 1927. He served in the war of 1914-18, receiving the medals.

EPIDEMIOLOGICAL NOTES

Discussion of Table

In *England and Wales* the numbers of notifications of scarlet fever and dysentery increased by 261 and 43, while the incidence of whooping-cough, diphtheria, measles, and acute pneumonia declined by 95, 76, 311, and 109 respectively when compared with the preceding week.

The 1,558 cases of scarlet fever constituted the largest weekly total since 1940. An increased incidence was common throughout the country and no large fluctuations were reported. The largest increases were those of London 29, Lancashire 23, Middlesex 22, and Somerset 21.

An outbreak of dysentery in Derbyshire with 86 cases was responsible for the increase in this disease. The distribution of the cases in the county was Staveley U.D. 32, Bolsover U.D. 4, Clowne R.D. 43, Chesterfield R.D. 6, Blackwell R.D. 1. Only 4 further cases were reported from the outbreak in Cumberland, Penrith M.B., making a total of 166 cases in four weeks. Of the 17 cases notified in London, 9 were in the borough of Wandsworth. The largest totals in the other administrative areas were those of Buckinghamshire, Aylesbury M.B. 5; Norfolk, Norwich C.B. 6; Staffordshire, Brownhills U.D. 9; Denbighshire, Wrexham R.D. 7; Pembrokeshire, Pembroke M.B. 8.

The notifications of acute poliomyelitis, 16 cases, were 11 more than in the preceding week. The cases were distributed through eleven counties, the only multiple cases occurring in Durham, Consett U.D. 2, and Warwickshire, Nuneaton M.B. 4.

For *Scotland* the feature of the returns was the increase in the incidence of dysentery; an outbreak involving 28 cases was reported from Banff County.

Small-pox

The number of fatal cases in the Glasgow epidemic rose to 8 with a death on July 29. No further cases have been reported for some days and the raising of the ban on hospital visitors is being considered. A case of small-pox has been reported in the London borough of Westminster. The patient was a Glasgow contact.

Returns for the Week Ending July 25

The notifications of infectious diseases during the week in England and Wales included: scarlet fever 1,516, whooping-cough 1,125, diphtheria 710, measles 6,817, pneumonia 479, cerebrospinal fever 89, acute poliomyelitis 12, dysentery 101, paratyphoid 11, typhoid 10.

No. 28

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended July 18.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1942 (a)	(b)	(c)	(d)	(e)	1941 (Corresponding Week) (a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	83	5	25	2	8	184	7	37	2	7
Deaths		1	3				4	6		
Diphtheria	692	35	150	34	10	773	31	161	22	25
Deaths	8		2	—	1	21		3	2	2
Dysentery	198	17	63	—	—	68	3	35	5	—
Deaths			—	—	—			—	—	—
Encephalitis lethargica, acute	2	—	2	—	—	3	—	—	1	—
Deaths		—	—				—	—		
Enteric (typhoid and paratyphoid) fever						318	6	24	5	1
Deaths						3	—	—	—	—
Erysipelas		—	44	4	4		—	43	10	2
Deaths		—	—				—	—		
Infective enteritis or diarrhoea under 2 years				103						
Deaths	37	3	2	9	6	41	3	11	13	1
Measles	7,050	747	241	61	143	5,368	153	49	155	4
Deaths	7	1	2	—	2	8	—	1	3	—
Ophthalmia neonatorum	106	8	15		—	99	4	19		1
Deaths										
Paratyphoid fever	6	—	1							
Deaths	1	—	—		—					
Pneumonia, influenzal*	516	22	3	3	7	531	23	3	2	2
Deaths (from influenza)	10	1	—	—	1	6	13	1	—	3
Pneumonia, primary			129	19				119	21	
Deaths		—		4	8		—		9	—
Polio-encephalitis, acute	1	—				—	—			
Deaths		—					—			
Poliomyelitis, acute	16	—	3	1	—	—	—	6	2	1
Deaths		—	—				—	—		
Puerperal fever	—	—	17	2	1	2	2	8	3	—
Deaths		—					—			
Puerperal pyrexia	155	12	7	—	4	127	8	31	2	—
Deaths										
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	1,558	88	244	60	18	732	30	99	59	16
Deaths	—	—	—	1	—	3	1	—	—	—
Small-pox	1	—	5		—	—	—	—		—
Deaths	—	—	—	—		—	—	—	—	—
Typhoid fever			1	13	4					
Deaths			—	—	—					
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths			—	—	—			—	—	—
Whooping-cough	1,295	131	15	76	3	4,840	259	55	40	7
Deaths	13	3	1	3	—	26	4	6	1	—
Deaths (0–1 year)	286	25	40	24	16	268	20	62	32	10
Infant mortality rate (per 1,000 live births)										
Deaths (excluding still-births)	3,558	484	524	161	112	4,018	521	565	186	112
Annual death rate (per 1,000 persons living)			11·8	10·7	†			12·3	12·3	†
Live births	5,895	695	789	390	284	4,833	368	864	334	226
Annual rate per 1,000 persons living			16·3	26·0	†			17·6	22·2	†
Stillbirths	233	20	41			183	13	35		
Rate per 1,000 total births (including stillborn)								39		

* Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

† Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

Medical News

New regulations issued by the Ministry of Health, to be known as the Public Health (Tuberculosis) Regulations, 1942, require medical officers of health to supply local offices of the Ministry of Labour with certain particulars of any women called before medical boards who are suffering or have suffered from tuberculosis. The procedure to be followed, which is different in some respects from that laid down for men, is set out in Circular 2648, which accompanies the regulations.

The minutes of the meeting of the Bombay Medical Council held under the presidency of Major-General R. H. Candy, C.I.E., K.H.S., on February 23 have been received in this country. This was the last meeting before the expiry of the term of the present council members at which General Candy presided, and a resolution was carried with acclamation placing on record the Council's high appreciation of the valuable services rendered by him as president, of the cordial manner in which he had conducted its deliberations, and of the courtesy, great ability, and zeal shown by him in handling the Council's affairs.

Sir Arthur J. Hall, M.D., F.R.C.P., having resigned the post of honorary consultant physician at Rampton State Institution, near Retford, Nottinghamshire, the Board of Control, with the approval of the Minister of Health, has appointed Dr. C. Gray Imrie, F.R.C.P., as his successor.

Prof. J. W. H. Eyre, M.D., has been elected President of the Royal Institute of Public Health and Hygiene in succession to the late Sir Thomas Oliver. He was senior vice-president and one of the founders in 1903 of the Institute of Hygiene, which amalgamated in 1937 with the Royal Institute of Public Health to form the present Institute.

The May issue of the *Boletín de la Oficina Sanitaria Panamericana*, which is dedicated to the eighth Pan-American Congress of the Child, contains articles on infant mortality in Costa Rica, the Child Health Department in El Salvador, infant protection in Mexico, physical education in Chile, and child nutrition in Latin America.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1.

ORIGINAL ARTICLES AND LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

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ADVERTISEMENTS should be addressed to the Advertisement Manager (hours 9 a.m. to 5 p.m.). Orders for copies of the *Journal* and subscriptions should be sent to the Secretary.

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QUERIES AND ANSWERS

Adder Bites

Prof. RENDLE SHORT (Bristol) writes in reply to Dr. Walker: No doubt many rural practitioners have seen a number of cases of this accident and can give a better account of it than I. In a recent case under my care, in a child who was bitten on the foot, the leg was very swollen and blue up to the groin for about three weeks, but the child did not seem much distressed. The bite had been excised and the wound treated with permanganate crystals within a few hours of the accident. A medical student who used to hunt adders in Somerset told me that he had been bitten on several occasions, and that after the first the bite gave very little trouble. I believe this is a well-known fact.

Coltsfoot

Dr. CONOR MAGUIRE writes from Claremorris: In reply to "Tussilago" (July 4, p. 30), William Woodville, M.D., *Medical Botany*, 1810, says: "The leaves have always been of great fame as possessing demulcent and pectoral virtues, useful in pulmonary consumption, coughs, asthma, and in various catarrhal symptoms. A valuable medicine in scrofula. It may be used as tea or given in the way of infusion, to which liquorice root or honey may be a useful addition. Smoking of the plant is recommended by Dioscorides, Galen, Pliny, and Boyle." He does not give any information about the curing of the plant.

LETTERS, NOTES, ETC.

Treatment of Scabies

Dr. E. M. BROCKBANK writes: In the 1914-18 war Manchester doctors serving with the Russian A.M.C. found that scabies was being regularly treated there by unguentum Wilkinsonii. This was a preparation in the Manchester Infirmary Pharmacopoeia of 1896 of Dr. A. T. Wilkinson (now consulting physician to the Infirmary). It consisted of equal parts of the *B.P.* sulphur, ammoniated mercury, and zinc oxide ointments, all of which then had benzoated lard as a base. The lard was looked upon as an effective constituent of the mixture. The benzoin prevented the lard from going rancid, and the 3% of it may have had some helpful antiseptic action. In Russia the ointment was applied three times in a week after preliminary soap and hot water preparation. In view of the more or less unsuccessful remedies now being used, it might be worth while giving the old-established one another trial in the present epidemic.

Disinfecting Thermometers, etc.

Dr. WILLIAM SCOTLAND (Birmingham) writes: During over twenty years' experience of assistants and locumtenents in general practice I find that almost invariably thermometers are sterilized by soaking in a suitable solution, but are then *popped back into their soiled cases*. So also with syringes: the actual syringe is carefully boiled but is put back into a soiled case. My routine advice is to carry half a dozen thermometers, soak them in a suitable antiseptic solution overnight, and boil the cases in the morning. Thus a soiled thermometer need never be used on any patient. Syringes *and their cases* should be boiled. As for ear, nose, and throat diagnostic sets, the specula rest in a velvet-lined nest. This shows that the manufacturers have little idea of the needs of the G.P. They do not appreciate that these portable sets are used as such in the patients' homes, and that there is frequently neither the time nor the convenience for sterilization immediately after use. There ought to be a boilable metal case to hold these parts, and a spare case to hold soiled ones until they can be disinfected at the surgery. I have advised more than one maker to redesign his "jewel case" on these lines, but with no result. So far as I am aware there is not one such on the market. All this is exceedingly elementary and very obvious, but unfortunately the obvious is too often missed.

We have recently received the price list of the medical products issued by British Drug Houses Ltd. (Graham Street, City Road, N.1). The products are arranged in alphabetical order, and the name of each product is followed by a description, indications for use, administration and dosage, modes of issue, and price to the medical profession. We are asked to state that the list will be sent, post paid, on request to any medical man.

MEDICINE 100 YEARS AGO

Extract from the *Provincial Medical Journal* for August 6, 1842:

"On the night of June 27, 1839, W.D., Esq., banker, in Douglas, aged fifty-two, was suddenly attacked with total blindness. He sent for me about two, a.m., of the 28th, when I found him sitting up in bed, straining and rolling about his eyes in search of the light. The pupils of both eyes were much dilated, and looked darker and more brilliant than usual. He felt no pain, except a slight uneasiness across the eyes and forehead, and along the nose. Upon a lighted candle being held close to the eye, he said he was sensible of nothing but 'total darkness.' Skin cool and natural, pulse not accelerated, but rather full; tongue white and loaded; manner composed, and mind collected. . . . I immediately took upwards of a pound of blood from the arm, administered six grains of calomel and six of scammony, and directed the patient to use a hot mustard bath for the lower extremities as soon as possible, and a stimulating application of tincture of camphor and sulphuric aether to the forehead and temples. Six hours afterwards, when his bowels had been evacuated by the purgative, an emetic mixture, containing the tartarised antimony and ipecacuanha, was exhibited, which, being slow in operating, a teaspoonful of powdered mustard was administered with excellent effect. At mid-day, 28th of June, ten leeches were applied to the temples, and the calomel and scammony were repeated soon after, with directions to assist their operation by a dose of castor oil in the evening if necessary. By these means the primae viae were well cleared out the first day of the attack; and as my patient complained much of thirst and nausea, and foulness of the mouth and palate, effervescing draughts, made of the volatile alkali and citric acid, were prescribed to be taken every hour, in order to obviate the necessity of loading the stomach with much liquid, and to mitigate the febrile heat of the surface, which set in towards evening of the first day." Passages from an article by Henry Oswald, F.A.S.E., etc., on "A Case of Amaurosis successfully treated."